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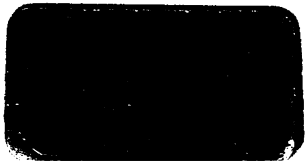

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PREFACE.

If any apology was needed in the publication of this NEW, ENLARGED, and REVISED EDITION, there would be sufficient when the author informs the reader that the smaller and inferior edition reached in sale upwards of one hundred thousand copies. Then, too, I am under no obligations to the public in this matter, as the book is written simply for the reader, and is intended as a STRICTLY CONFIDENTIAL, PROFESSIONAL, SCIENTIFIC CONSULTATION BETWEEN AUTHOR AND READER, in which the latter is in search of knowledge, and of which the former is willing and able to impart. Every man and woman, yea, every boy and girl, who has sufficient understanding, should possess a copy of this work.

This book, being satisfactory in its explanations, all can readily understand. Works heretofore published on Anatomy give dry details of disease, covered over with Latin and Greek terms, having no more life than the dried skeletons and preparations they treat upon, and which are incomprehensible to any but a professional reader.

The object has been to render this work so full, so clear, so thorough and complete, that *every one* may understand the structure and functions of the body, the conditions of health, the cause of disease, with all systems of cure. In addition, combining in the book every important subject relating at all to man or woman.

It is, indeed, a great satisfaction to me, knowing that

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this work will be the means by which thousands of people — male and female — may preserve their health, and impart it to generations of wise, happy, and healthy beings; that it may be the means of a real physical redemption for all mankind, out of which will be developed all moral excellence, intellectual elevation, social harmony, individual and general happiness.

Doubtless some of you have read books *professing* to treat upon similar subjects, still leaving you many things of the most familiar character to learn, thousands of questions to ask, in order to gain that knowledge which will be of service to you in leading true lives. To place before you all that is now wanting, in the clearest and least unobjectional manner, is the design of this work.

We have aimed to give, exclusive in this work, that which does not exist in any other, or, if in other works, is so hidden under a mass of error, or scientific coverings, as to be worse than useless.

The style and make-up is the result of long deliberation. The illustrations are generally from European works, the most accurate and finest the country affords.

In conclusion, let me ask, with a conscience clear, a mind free, with view to truth, and a determination to accept it, you read this book, and, so far as the lessons commend themselves to your reason, that you live up to them, and endeavor to lead lives of purity, devoting yourselves to the highest good. I rely upon the calm judgment of the reader to uphold me in all that is just, remembering that I have aimed to avoid error, and place before you TRUTH, SCIENCE, and KNOWLEDGE, in the most understanding manner possible.

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THE

METALLURGIST'S GUIDE,

WITH

SECRETS OF TRANSMUTATION.

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PART I.

CHAPTER I.

DIVISIONS OF THE HUMAN BODY.

THE several paragraphs here treated are "Man and his Character," "Divisions of the Human Body," "Bones," "Muscles," "Blood-vessels," "Circulation," "Veins," "Lymphatics," "Brain and Nerves," "Organs of Digestion," "Lungs," "Liver," "Spleen," "Kidneys," "Bladder and Urethra," "Male Organs of Generation," "Female Organs of Generation — both external and internal," "The Hymen," etc., "Important Observations on Anatomy."

Man and his Character. — Man is an organized being, with the consciousness of existence, and of having certain faculties of thinking, feeling, and acting. By means of his senses, tastes, and attractions, he holds relations to the material universe, to other beings, inferior to or like himself, and, apparently, to superior beings.

The fully-developed man, of the highest type with which we are acquainted, is a beautiful and majestic animal, six feet high, walking erect on two legs, with an oval-shaped head, balanced upon a perpendicular spinal column, with two arms, furnished with prehensile organs of a curious and complex structure. He has a soft, smooth skin, of a rosy white color, and fine hair grows upon the head, chin, and around the virile organs.

The female of this animal is commonly shorter than the male, more delicately formed, with longer hair upon the head, and none on the face; with smoothly rounded limbs, tapering to smaller hands and feet; with narrower shoulders, wider hips, and a beautiful bosom.

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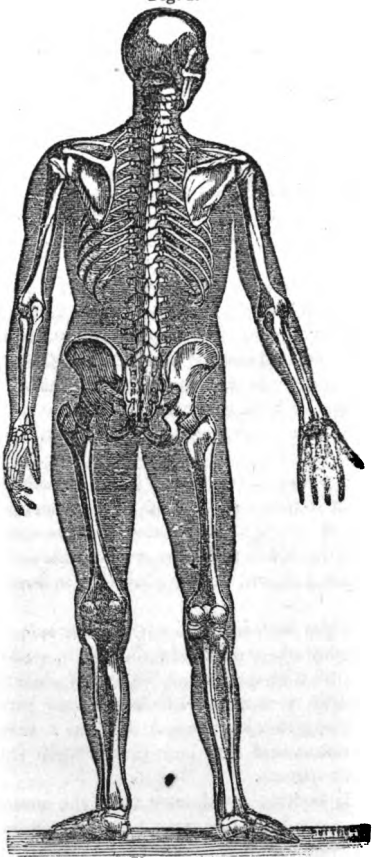
The sexes differ in mental and moral qualities, as will be more particularly noted hereafter.

Divisions of the Human Body.—The human body, viewed outwardly, is composed of a head, neck, trunk, two superior extremities, and two inferior, with some smaller appendages. Standing before you, a line down the center divides it into two equal and symmetrical portions. This is the case with the body as a whole, but is not the fact respecting the internal organs, which are not symmetrical, or can not be divided into two equal halves. But the bones are either symmetrical or in pairs, and so are all the muscles of the system of voluntary and instinctive motion.

Fig. 1.



RELATION OF BONES TO BULK.

The trunk is divided into three cavities: the upper, chest or thorax; the middle, abdomen; and the lower, the pelvis. The thorax contains the heart and lungs; the abdomen contains the stomach, intestines, liver, spleen, pancreas, kidneys; the pelvis contains the bladder, rectum, the ovaries, uterus, and vagina, in women; and the seminal vesicles and prostate gland in men. In the latter, the most important generative organs are external.

The head is divided into two parts. The face, which forms a small angle of its anterior inferior portion, and the cranium, an oval box of bone,

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filled with the brain, a prolongation of which extends about three fourths of the length of the back-bone, or vertebral column, and branches or fibers from which are sent off to every part of the body.

The whole body is made up of several systems of organs or tissues, which enter into every part of its structure. Thus we have, —

1. A bony skeleton, or framework, of two hundred and forty bones, with their cartilages and ligaments, giving it form, solidity, and power of motion.

2. A muscular system, consisting of four hundred muscles, with their tendons, by which all motions are performed, and extending over the whole system, making a large portion of its bulk.

3. An areolar or cellular system, composed of fine interwoven fibers, making the sheaths of vessels, muscles, nerves, and forming the parenchyma, or connecting substance of various organs. It is in or upon this tissue that the fat cells are deposited.

4. The arterial system, by which the blood is carried from the heart to every part of the body, supplying bones, muscles, nerves, skin, membrane, etc., with the vital fluid which sustains them all, and repairs their hourly waste. The ramifications of the arteries are inconceivably minute. The point of the finest needle pierces hundreds of blood-tubes the moment it penetrates the true skin. And wherever the blood is carried by the arteries, it must return by the veins; so that we have a venous system as vast and pervading as the arterial.

5. A portion of the blood, believed to be the finest and most highly vitalized, is returned to the heart, from every part of the body, by another system of vessels, or tubes, called lymphatics: these form a network over the whole body, and penetrate to every part of it.

6. The nervous system connected with the brain is also distributed to every part of the body, so that the needle which draws blood by piercing microscopic veins and arteries, also gives exquisite pain by wounding the delicate fibers of the nerves of sensation.

7. As the nerves of the ganglionic system, called nerves of organic life, accompany the blood-vessels in their minutest ramifications, these nerves must equally pervade the whole organization.

Here, then, we have seven pervading systems, each of which extends to the entire body, and most of which would preserve its entire and perfect form, if deprived of all the others.

Among the extensive and important tissues of the human body, we must not omit the external skin, which lines the whole surface

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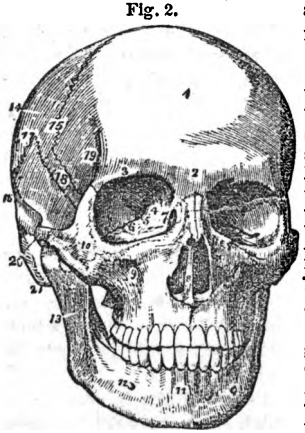
of the body; the internal skin, or mucous membrane, which lines its interior parts, which are connected with external apertures; and the serous membranes, which line the shut cavities, and are folded around the most important organs.

All these tissues and organs we must briefly consider, leaving ordinary and unimportant particulars to the elementary works, in which the student may find them fully described.

Bones. — Bone is composed of nearly equal parts of cartilage and earthy matter. The cartilage is first formed, and then the earthy matter is deposited. Each is deposited by the blood, which contains in itself the materials of every tissue and every secretion. Bone is an organized, living structure, pierced by blood-vessels and nerves, subject to waste, and requiring renewal, liable to fracture and disease, and demanding reparation. Seemingly solid, it is very porous, so that a piece of bone has been compared to a heap of empty boxes, thrown loosely together. It is, however, more regular in its construction.

Bones are long, as the arm and thigh bones; cuboidal, as those of the wrist and instep; or flat, as the shoulder-blade and skull-bones. They are joined closely and immovably, by sutures, or a sort of dovetailing; by symphysis, as in cartilaginous joinings; or by movable joints, as those of the shoulder and hip. There are ball-and-socket joints, allowing the bone to be moved in all directions, while the elbow, knee, ankle, and other joints are called hinge-joints, allowing only of the simple movements of flection and extension.

Fig. 2.



FRONT VIEW OF THE SKULL.

1. The frontal portion of the frontal bone. 2. Nasal tuberosity. 3. Supra-orbita, ridge. 4. Optic foramen. 5. A fissure, called sphenoidal. 6. Another fissure, called spheno-maxillary. 7. The lachrymal fossa. 8. Opening of the anterior nares, the vomer in the center, on which the figure is placed. 9. Infra-orbital foramen. 10. Malar bone. 11. Symphysis, or point of union of the lower jaw. 12. Mental foramen. 13. Ramus of the lower jaw. 14. Parietal bone. 15. Coronal suture. 16. Temporal bone. 17. Squamous suture. 18. Upper part, or greater wings, of sphenoid bone. 19. Commencement of temporal ridge. 20. Zygoma of temporal bone, forming, with the malar, the zygomatic arch, under which is the zygomatic fossa. 21. The mastoid process.

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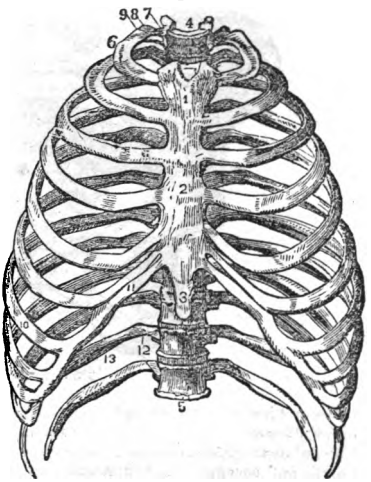
The ends of the bones have a covering of cartilage, and the joints are firmly bound together, and curiously strengthened by ligaments. If the best artist or mechanician in the world were to exert his ingenuity a thousand years, he could discover no better method of making a skeleton. Had there been any better way of constructing any part of it, God would have chosen that way.

The bony structure of the head is very complicated. There are eight bones in the cranium, and fourteen in the face. The former are mostly flat, and inclose the brain, to which they offer an admirable protection; the latter are of various irregular shapes, forming the nose, jaws, orbit of the eye, roof of the mouth, etc.

The head rests on the spinal column, which is composed of seven cervical, or neck vertebræ, twelve dorsal, or back, and five lumbar, or those of the lower part of the back. This column, which increases in size from above downward, rests, at its base, upon the sacrum, a wedge-like bone which forms the keystone of an arch, made by the bones of the pelvis, which, in their turn, rest upon the thigh-bones, and these again on the bones of the legs and feet. Twelve ribs on each side are attached to the dorsal vertebræ: these curve round in front, and by cartilaginous connections with the sternum, or breast-bone, form the bony case of the thorax, and protect the heart and lungs. The arms are joined to the body loosely, by means of movable shoulder-blades, which are kept in place by muscles, and by means of the collar-bone.

Fig. 3.



THE THORAX.

An anterior view of the thorax. 1. The manubrium. 2. Body. 3. Ensiform cartilage. 4. First dorsal vertebra. 5. Last dorsal vertebra. 6. First rib. 7. Head of first rib. 8. Its neck. 9. Its tubercle. 10. Seventh rib. 11. Costal cartilages of the ribs. 12. Last two false ribs. 13. The groove along the lower border of each rib.

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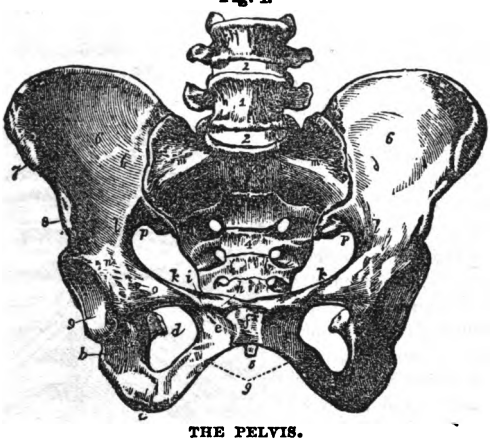
The points about the bony skeleton most worthy of notice are, —

The protection of the brain by the eight bones of the cranium; those on the surface being formed of two plates, with a sponge-like layer of bone between, so as to give the delicate internal organs the greatest possible protection from external injuries:

The strong and flexible back-bone, and its protection of the spinal marrow, or extension of the brain; so formed as to sustain an immense weight; to bend easily in every direction; to afford points of attachment for hundreds of muscles; and to be broken with great difficulty.

Fig. 4.



THE PELVIS.

Front view of a female pelvis, which is broader, its cavity more shallow, and the bones lighter than in the male. 1. The last lumbar vertebra. 2, 2. The intervertebral substance connecting the last lumbar vertebra with the fourth and sacrum. 3. Promontory of the sacrum. 4. Anterior surface of the sacrum, on which the transverse lines and foramina are seen. 5. Lower point or tip of the coccyx. 6, 6. The iliac fossæ, forming the lateral boundaries of the false pelvis. 7. Anterior superior spinous process of the ilium — left side. 8. Anterior inferior spinous process. 9. The acetabulum. *a*. The notch of the acetabulum. *b*. Body of the ischium. *c*. Its tuberosity. *d*. The spine of the ischium, seen through the obturator foramen. *e*. Os pubis. *f*. Symphysis pubis. *g*. Arch of the pubes. *h*. Angle of the os pubis. *i*. Spine of the pubes; the prominent ridge between *h* and *i* is the crest of the pubes. *k*, *k*. Pectineal line of the pubes. *l*, *l*. The ilio-pectineal line. *m*, *m*. Its prolongation to the promontory of the sacrum. The brim of the true pelvis is represented by the line *h*, *i*, *k*, *k*, *l*, *l*, *m*, *m*. *n*. The ilio-pectineal eminence. *o*. The smooth surface which supports the femoral vessels. *p*, *p*. The great sacro-ischiatic notch.

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The coat-of-mail-like movable thorax, formed of the dorsal vertebræ, ribs, and sternum, which expands and contracts its dimensions in rising and falling.

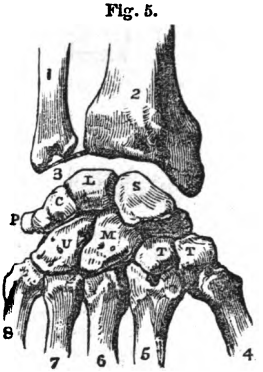
The bony pelvis; strong, to support the weight of the body, and so formed as to sustain and protect the contents of the pelvis, and in the female larger than in the male, to allow of the birth of a full-grown fœtus.

The rolling articulations of the two bones of the forearm, allowing the hand to be turned in every direction, and the combination of small bones, forming the flexible joint of the wrist, and the flexible arch of the foot.

Other points of interest may be noted in our subsequent observations.

The bones are soft and flexible in infancy, hard and brittle in old age. When broken, they are usually repaired in five or six weeks by the deposition of new bony matter from the blood. But where pieces are taken from the skull, they are replaced by dense membrane; and under the capsular ligament, at the hip joint, and in states of disease, they often refuse to unite.

Fig. 5.



THE CARPUS.

1. Lower end of the radius. 2. Lower end of the ulna. 3. Interarticular cartilages, attached to the styloid process of the ulna, and to the margin of the articular surface of the radius. S. The scaphoid. L. Semilunar. C. Cuneiform. P. Pisiform. T. Trapezium. T. Trapezoides. M. Os magnum. U. Unciform.

Muscles.—A muscle is a bundle of very minute fibers, each contained in a separate sheath, and each having the property of contracting under the nervous or other similar stimulus. As the whole muscle contracts, by the contraction of its fibers, contracting in its length, and expanding in its circumference, it draws the parts to which it is attached together with a power in proportion to the size of the muscle and the stimulating force applied. The nervous power has, in fact, more to do with the force exerted than the strength of the muscle, and the force of contraction is often much greater than its own power of cohesion. I compare the contraction or drawing together of the particles or disks, of which the ultimate fibers of a muscle are composed, under the nervous influence, to the development of the magnetic attraction in pieces of iron under the galvanic current.

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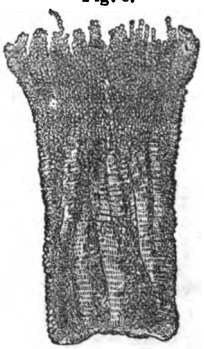
Fig. 6.



A view of the fascicular arrangement of the fibers of a voluntary muscle, the fibers separating at the end into brush-like bundles of fibrillæ. The disk-like formation, of which each ultimate fiber is composed, is also exhibited. Very highly magnified.

The sheaths of the muscular fibers seem to unite together to form the tendons by which they act on distant parts, when compactness is wanted for use and beauty, as in the wrist and ankle.

The head alone has seventy-seven muscles. There are eight for the eyes and eyelids. The eyeball has four straight muscles, — one above, below, and on each side, and two oblique, to give it a rolling motion. One of these, before it is attached to the eye, passes through a pulley, to change the direction of its action. There are eight muscles for the lips, eight for the jaw, eleven for the tongue, seventeen for the motions of the head and neck; and it is by the variously combined action of these that we have all our movements and expressions. There are seventeen muscles for the movements of the chest, abdomen, and loins. These perform, among others, the important function of respiration. The cavity of the chest is enlarged some eighteen times a minute, by raising the ribs and sternum, and still more by straightening or drawing down the diaphragm, or muscular separation between the thorax and abdomen. When this is done, the air rushes into the lungs, to prevent the vacuum that would otherwise be formed. Next, the three sheets of abdominal muscles contract, force up the diaphragm, draw down the ribs, and forcibly expel the air. And this action is kept up, night and day, sleeping and waking, from the moment of birth till death, while the heart, a muscular organ, contracts four times as often, during the same period. The whole body of man, in all its parts and organs, is, during all this time, the scene of various but constant action.

Muscles are voluntary and involuntary, or both; conscious and unconscious. We have no direct control over the heart, or the muscular fibers of the stomach, intestines, bladder, or uterus. We can govern somewhat those of respiration. The muscles of deglutition are involuntary mostly, perhaps entirely. When a morsel of food is pressed back by the tongue beyond the fauces, it is seized, and

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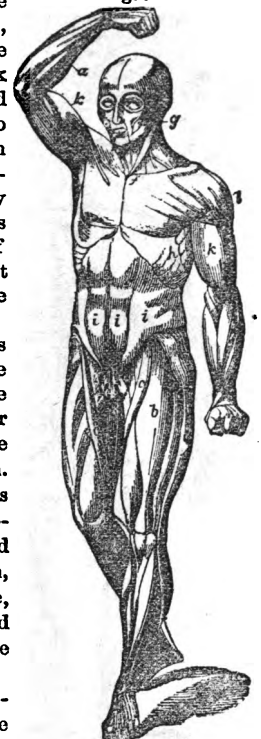
by a series of involuntary contractions, carried slowly through the whole extent of the alimentary canal.

Fig. 7.



MUSCULAR SYSTEM.

The largest and strongest muscles are the extensors of the lower extremities, and the flexors of the upper. Thus we have large masses of muscle on the back of the leg, forming the calf, to extend the foot; on the front of the thigh, to straighten the knee-joint, and again on the posterior portion of the pelvis, to extend the thigh. How much of the beauty of the human form depends upon this muscular arrangement! This is one of the harmonies of nature, which manifest the goodness as well as the wisdom of the Creator.

The bones and muscles are instruments of form and locomotion, but are made subservient to many other uses, and the whole body is but a convenient means for the manifestation and enjoyment of the soul, whose especial organ is the brain. This brain, in which resides the conscious ME, the individual, is carried about, protected, nourished, and variously ministered to by its bodily organs, to which, in turn, it distributes vital energies. In disease, there is discordance between brain and body. In insanity, the discord is in the brain.

Blood-vessels.—The necessity for the constant nourishment of the whole body, growing out of a constant waste of matter by its perpetual activity, makes needful a vast system of tubes, by which the blood may be carried everywhere, and returned again to the center of circulation. Of the nature of the blood, and its changes, we will speak further on. At present, let us look simply at the mechanical arrangements for its distribution and return.

We have first, in the center of the thorax, a heart, consisting of two parts, right and left, each having two cavities, an auricle and

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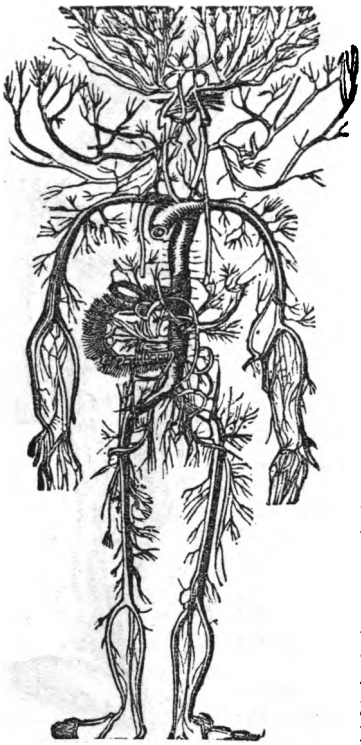
ventricle. The heart is simply two force pumps, joined together for convenience. In some of the lower animals, as fishes, there is but a single pump. In reptiles, there are three chambers. Each pump is furnished with beautiful valves, which allow the current of blood to go on, but prevent its return. These valves work constantly for more than a hundred years, in some cases, without getting out of order.

Fig. 8.



ARTERIAL SYSTEM.

Now, this is the course of the circulation. The blood, as it comes from all parts of the system, by the veins, is received into the right auricle, or receptacle, of the heart, from which, by a muscular contraction, it is sent into the right ventricle. The right ventricle contracts, and throws the blood it contains, through the pulmonary artery, into the lungs, where it is purified and changed in its color and qualities. This is the action of the right pump. The blood now goes back by the pulmonary veins to the *left* auricle, thence into the left ventricle, which, contracting, forces it into the great aorta, and so on over the whole body. These two pumps act together. Two auricles contract, then the two ventricles; one pump supplies the lungs, and one the whole body. The right, or lung pump, receives the blood from the body; the left, or body pump, receives it from the lungs.

As there are about twenty-five pounds of blood in the body, and as the heart sends on about two ounces at each pulsation, at the

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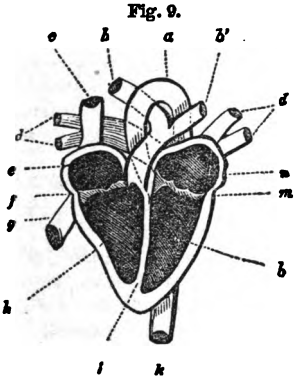
rate of say seventy a minute, it is easy to estimate the time it takes for the whole quantity to circulate. But some portions, having farther to go than others, must get round slower. The living blood is the pabulum of life to all parts of the system. It is constantly distributing its substance to bone, muscle, brain, nerve, etc., constantly sending off secretions and excretions, and it must also receive regularly new supplies of matter, prepared from our food, by the process of digestion.

From the great aorta, which curves over the heart, and then passes down, near the spine, go off branches to the head and brain, the arms, the internal organs, the lower extremities — in a word, to every portion of the body. These branch off, finer and finer, until at last we come to a system of capillaries, or hair-like tubes, of such extreme minuteness, that they can only be seen by microscopes of

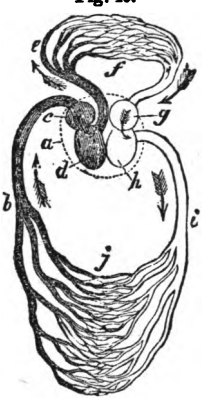
Fig. 9.



THE HEART.

Ideal section of mammalian heart. *a*. Arch of aorta. *b*, *b'*. Pulmonary arteries. *c*. Superior vena cava. *d*, *d'*. Pulmonary veins. *e*. Right auricle. *f*. Tricuspid valves. *g*. Inferior vena cava. *h*. Right ventricle. *i*. Septum ventriculorum. *k*. Descending aorta. *l*. Left ventricle. *m*. Mirtal valve. *n*. Left auricle.

Fig. 10.



CIRCULATION.

Ideal view of the course of the circulation. *a*. Incloses the four chambers of the heart. *b*. Veins bringing dark blood to *c*, right auricle. *d*, Right ventricle. *e*. Pulmonary artery. *f*. Beginning of pulmonary vein conveying the arterialized blood to *g*, left auricle. *h*. Left ventricle. *i*. Arteries. The arrows show the direction of the current.

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the highest powers — so fine, that the red globules of blood, which are only the five thousandth part of an inch in diameter, can no longer pass through them, and only the smaller white globules, and finally, the liquid serum alone, can find admission.

By this means, blood is everywhere supplied, in just the quantity required. We have it when we want it, where we want it, and as much as we want. In sensitive and active organs, there are many and large arteries, and abundant capillaries, and the supply is active. Thus, four arteries go to the brain, which receives a large portion of all the blood in the body. But this is not all. Here, at this point, we must call attention to a fact of deepest import, which further on will be more fully illustrated. The heart, a beautiful mechanical contrivance, — the most perfect of forcing-pumps, — can only send the blood, with a certain force, estimated at fifty pounds, into the main artery. It can not influence the distribution to one of its branches. It can send it faster or slower, and with more force or less; but this is all. It can not send blood where it is specially wanted. It can not send it one hour to the brain, producing active thought and vivid emotions, and the next hour to the stomach, to aid in digestion, and the next to the organs of generation, producing the most vivid emotions of desire, and sensations of pleasure. The heart does not direct the blood to the pregnant uterus, to nourish the growing germ, nor to the broken leg, to furnish an extra supply of bony matter.

For all this, some other power is needed — a power guided by intelligence, a power which resides in the nervous system, and which is intimately related to the hidden principle of life.

Veins. — As the blood is sent with a vigorous impetus from the left ventricle of the heart, through a system of dense, tough, cylindrical tubes, called arteries, over the whole body, by the branchings and ramifications of these vessels, and the networks, or anastomosis, they everywhere form with each other, until the great branching tree or vine expands to millions of twigs and hair-line tubes of microscopic fineness; so, in order that this same blood may be carried back to the heart, there must be other sets of minute tubes, venous radicles, gradually uniting and enlarging, until the blood is poured through two great tubes, ascending and descending into the right auricle. Both arteries and veins have the power of expansion and contraction, and do expand to accommodate unusual quantities of blood, and do contract, to force their contents onward to their destination. The large veins generally follow the course of the arteries. In many parts, there are two veins accompanying one

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artery; but there are also many veins which are external, lying directly beneath the skin, and they are so distributed over the surface, as, I believe, that the venous blood may have the influence of air and light. The larger veins in the lower extremities are provided with numerous valves, to prevent the blood being forced back upon the capillaries by its own weight, or by muscular pressure.

The blood is forced back to the heart through the veins by capillary action, and not by the pressure of the heart; and this action continues after the heart has ceased to act, so that the arteries are commonly found entirely emptied of blood, and filled with air, while all the blood in the body is found in the distended veins. This proves that the action of the heart has no more to do with the circulation of the blood than to throw it within reach of the capillaries, which have a circulating power of their own. In fact, trees and all plants circulate their juices without a heart, and so do many of the lower orders of animals.

Lymphatics. — Diffused over the whole body, and penetrating all its organs, is a third set of tubes, small, transparent, furnished with valves at short intervals, and, what is peculiar, entering and emerging from little knots, or ganglia, or glands, which are scattered over the body, but which are found in large numbers on the sides of the neck, in the armpits, the groins, and upon the mesenteric folds of the intestines. These tubes convey white blood, or lymph, from every part of the system to the descending vena cava, where it mixes with the current of venous blood, returning to the heart.

But the lymphatics of the intestines are called lacteals, and convey a portion of the nutriment elaborated by digestion, through the thoracic duct, to the same destination. The anatomy of these vessels has been but lately understood, and their physiology is yet but little known.

Brain and Nerves. — The hollow of the skull, from the top of the head down to a line formed by the base of the orbit of the eye, the opening of the ear, and the top of the back of the neck, and in its entire breadth, is completely filled with a pulpy mass, gray without, and of a pearly white within, called the brain, or encephalon. It is divided into a large anterior and superior portion, the cerebrum, and a smaller posterior and inferior portion, called the cerebellum. In the center, between these, a prolongation of the brain, containing fibers from both, passes down into the hollow of the vertebral column. The portion within the skull is the medulla oblongata; the remainder is the spinal cord. It is

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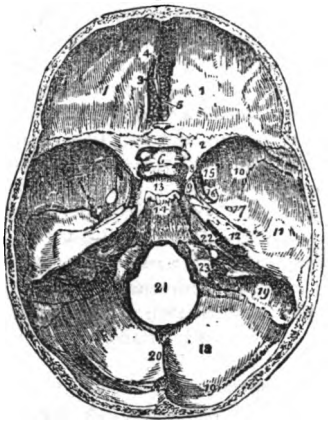
Fig. 11.



INNER BASE OF THE SKULL.

about half an inch in diameter, and, like the brain, is composed of both gray and white matter, and its different parts have distinct functions. Brain and spinal cord are divided into two equal halves by the median line, so that all its organs and nerves are in pairs, and one side may be diseased or paralyzed, while the other is healthy and active.

1, 1. Frontal space filled by the anterior lobes of the brain. 5. Cribriform plate of ethmoid bone for the passage of the olfactory nerves. On each side of 6 are the passages of the optic nerves. 13, 14. Body of sphenoid bone, on each side of which are the middle lobes. 21. Foramen magnum, or opening for spinal cord, below which are the lobes of the cerebellum.

Fig. 12.

BRAIN EXPOSED.

The cerebrum is believed to be the organ of sensation, thought, and most of the sentiments and propensities or passions. The cerebellum seems to preside over muscular motion and the generative function. The propensities or instincts, which we possess in common with the lower animals, are found in the lower portion of the brain. The higher faculties, and those peculiar to man, are

The external surface of the cerebrum. *a*, *a*. The scalp turned down. *b*, *b*. Cut edges of the skull-bones. 3. The dura mater suspended by a hook. 4. The left hemisphere.

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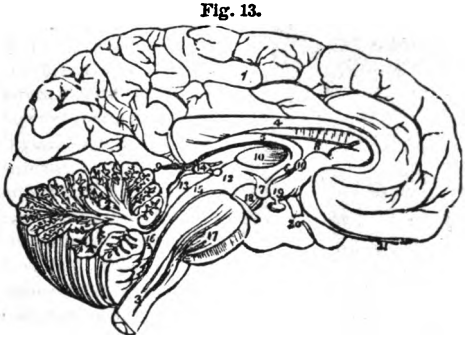
found in the upper portion. Generally the forehead is intellectual; the top of the head, moral and religious; the side, worldly; the lower, passional and selfish. The lower organs connect us with the physical, the higher with the spiritual; and all acting together make up an harmonious being.

The outer gray matter of the brain is composed of cells of microscopic minuteness. The white matter consists of tubes, filled with a still softer substance. All these cells, tubes, etc., are of incomprehensible minuteness.

The brain, as the true center of life, and the special residence of the soul, holds constant communication with every part of the body, and through the five senses with the external world. A pair of olfactory nerves, distributed over the lining membrane of the nose, carries to the center of the brain an impression of odors;

Fig. 13.



MESIAL SURFACE OF THE BRAIN.

Fig. 13 represents the mesial surface of a longitudinal section of the brain. 1. Inner surface of left hemisphere. 2. Divided center of the cerebellum, showing the arbor vitæ. 3. Medulla oblongata. 4. Corpus callosum. 5. Fornix. 6. One of the crura of the fornix. 7. One of the corpora albicantia, pea-shaped bodies between the crura cerebri. 8. Septum lucidum. 9. Velum interpositum. 10. Section of the middle commissure in the third ventricle. 11. Section of the anterior commissure. 12. Section of the posterior commissure. 13. Corpora quadrigemina. 14. Pineal gland. 15. Aqueduct of Sylvius. 16. Fourth ventricle. 17. Pons varolii, through which are seen passing the diverging fibers of the corpora pyramidalia. 18. Crus cerebri of the left side, the third nerve arising from it. 19. Tuber cinereum, from which projects the infundibulum, having the pituitary gland appended to its extremity. 20. One of the optic nerves. 21. The left olfactory nerve, terminating anteriorly in a rounded bulb. Those who are curious in anatomical and meaningless barbarisms, will find more in the books.

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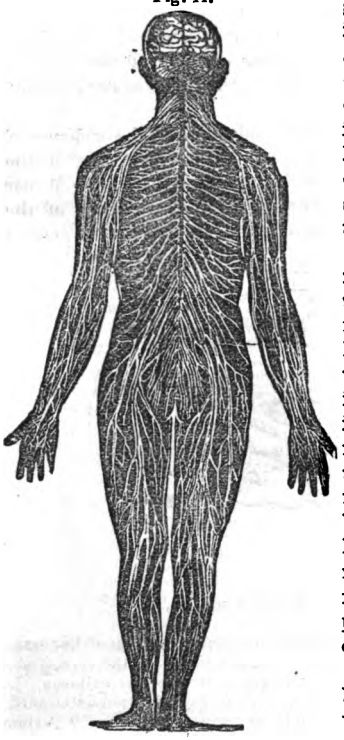
the optic nerves, expanded upon the internal chamber of the eye, are impressed with pictures of objects; the auditory nerve, curiously extended through the apparatus of hearing, receives and conveys impressions of sound; the gustatory nerves give us all ideas of savors; and nerves of sensation or touch go off to every portion of the body, especially to the whole surface and its more sensitive portions. Nerves of motion are also sent off in pairs from the brain and spinal cord to every muscle in the body.

Fig. 14.



NERVOUS SYSTEM.

The distribution of nervous fibers is as minute as that of the blood-vessels; and if we reckon the nerves of organic life, it is much more so. Yet the nerves are everywhere nourished by the blood, as the blood is everywhere controlled by the nerves. Blood is formed under the nervous influence, and nerve matter is continually furnished by the blood. Which is first? If either, it is the highest, the nerve. The spinal cord is the first part seen. The brain expands at the end of the spinal cord.

I hold that spinal cord, and brain, and blood are formed under the influence of nerve matter belonging to the system of nerves of organic life, called the ganglionic or sympathetic system.

Organs of Digestion.—All organized beings require food. A rock is formed by a simple, more or less regular, aggregation of atoms; and there it remains, without change, except as it is acted upon by external agencies. But a vegetable or an animal has an internal growth or development, a vitality, and is

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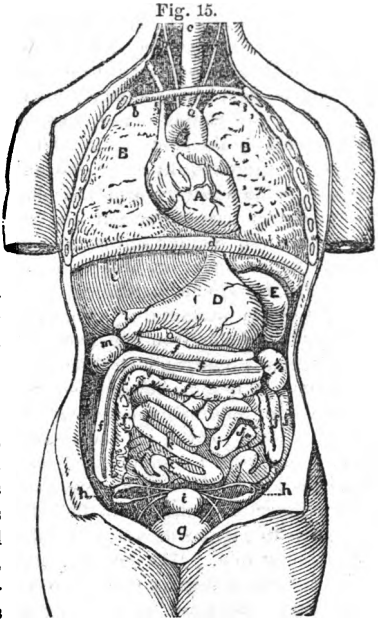
subject to continual changes of form and matter. Every action is accompanied by waste. Each thought, each motion, necessitates a chemical change, by which matter is made unfit to remain longer in the system, or, at least, in the same relations. The waste or effete matter is constantly thrown off in various ways, and new matter must be brought in to fill its place. Vegetables gather this matter from the earth by their roots, and from the atmosphere by their bark and leaves. Animals obtain their nutriment from vegetables, water, and air. In animals, the stomach, intestines, lungs, skin, etc., correspond to the roots, leaves, and bark of trees.

Fig. 15.



VITAL SYSTEM.

A. Heart. B, B. Lungs. C. Liver. D. Stomach. E. Spleen. *m*, *m*. Kidneys. *g*. Bladder. *d* is the diaphragm, which forms the partition between the thorax and abdomen. Under the latter is the cardiac orifice of the stomach, and at the right extremity, or pit of the stomach, is the pyloric orifice. Below are the large and small intestines. *i*. Uterus. *h*, *h*. Ovaries.

Digestion of food begins in the mouth, where it is cut, crushed, and ground by a set of thirty-two teeth, which differ from both carnivorous and herbivorous animals, and are adapted to the use of fruit, nuts, seeds, and roots. As food is mashed into a pulp by the teeth, it is moistened by the saliva, a digestive fluid, which is secreted from the blood by three sets of glands—the parotid, around the ear; the submaxillary, beneath the angle of the jaw; and the sublingual, under the tongue. When the food is sufficiently mashed and moistened, as it always should be, and mixed with the saliva, which is very necessary to its proper digestion, it is pressed back by the tongue into the pharynx,

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a membranous and muscular pouch, which forms the upper part of the throat. The opening of the windpipe is closed by a valve, over which the food passes in safety, and the contractions of the pharynx, and the esophagus, as the narrower portion of the tube is called, force it down through the thorax into the stomach, which is an expansion of this tube, lying a little to the left, below the diaphragm.

When the food has been acted upon by the gastric juice, which is secreted by the glands of the stomach, and has been rolled about and churned by the contraction of its muscular coats, a portion of it, already prepared to enter the circulation, is absorbed by the veins, as is the water we drink, alcohol, and other substances, while the remainder passes through the valvular or constricted pyloric orifice into the smaller intestine — duodenum.

Digestion still goes on, and in this tube, the food, converted into chyme in the stomach, receives the addition of two important elements — the pancreatic juice, from the pancreas, similar to saliva, and the bile from the liver. These change the chyme into chyle, which is now rapidly taken up by the lacteal absorbents.

We have now some twenty-five feet of small intestine, in all of which several interesting operations are performed. The veins are taking up such matter as can penetrate their coats; the villi, or little nipples, which contain the lacteal vessels, are selecting their matter by a kind of secreting process, which I shall soon describe; while millions of glands, with their follicles, or openings, are pouring out matter, either to aid in the digestive process, or to be cast out of the system. The entire length of the intestinal canal is a vast collection of organs, each performing its own vital function.

The small intestines open, by a valvular orifice, into the beginning of the large intestine, at the lower part of the right side of the abdomen. Here the contents become fecal, having the appearance and odor of excrements, which arises from the secretions of glands peculiar to this portion of the intestines. From the cæcum, with which the large intestine begins, we have the ascending colon, passing up on the right side, the transverse colon crossing over, a little above the navel, and the descending colon passing down on the left side, when it turns backward, and becomes the rectum, terminating at the anus, where a strong round muscle keeps a tight grasp of this extremity of the digestive apparatus. Of the matter taken into the mouth, in a healthy state of the digestive organs, very little finds its way out at the anus. The bran of wheat and corn, the skin and seeds of fruit, woody fiber, and other indigestible matter, are mixed with a much larger quantity of excrement, made up of waste matter of the system poured into this canal by millions

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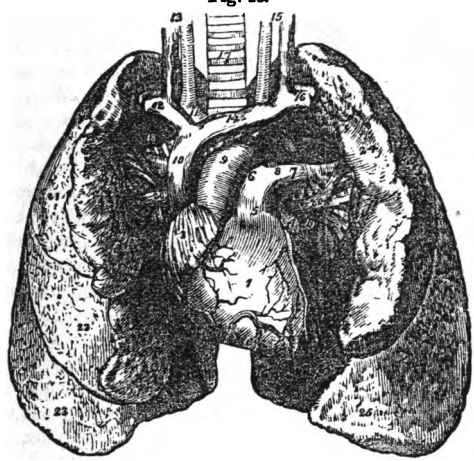
of glands, which separate it from the blood. This is evident from the fact that there may be copious evacuations from the bowels day after day, when no food has been taken.

The intestines are everywhere enveloped by a thin, shining, serous membrane, called the peritoneum, which also lines the sides of the abdomen, and covers its viscera; and they are gathered in their length to a kind of ruffle, called, in its different parts, the mesentery, mesocolon, and mesorectum. In the mesentery and mesocolon are found the arteries that supply the intestines, the veins, nerves, lacteals, and lacteal glands.

Lungs.—The entire cavity of the thorax, excepting the

Fig. 16.



HEART AND LUNGS.

Fig. 16 represents the anterior aspect of the anatomy of the heart and lungs. 1. Right ventricle; the vessels to the left of the number are the middle coronary artery and veins. 2. Left ventricle. 3. Right auricle. 4. Left auricle. 5. Pulmonary artery. 6. Right pulmonary artery. 7. Left pulmonary artery. 8. Remains of the ductus arteriosus. 9. Aortic arch. 10. Superior cava. 11. Arteria innominata; in front of it is the right vena innominata. 12. Right subclavian vein; behind it is its corresponding artery. 13. Right common carotid artery and vein. 14. Left vena innominata. 15. Left carotid artery and vein. 16. Left subclavian artery and vein. 17. Trachea. 18. Right bronchus. 19. Left bronchus. 20, 20. Pulmonary veins; 18, 20, from the root of the right lung; and 7, 19, 20, the root of the left. 21. Upper lobe of right lung. 22. Its middle lobe. 23. Its inferior lobe. 24. Superior lobe of left lung. 25. Its lower lobe.

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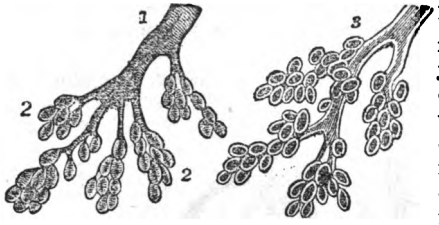
space occupied by the heart, large blood-vessels, and esophagus, is completely filled by the lungs, of which there are two. They are of nearly the same structure in birds and mammalia as in man — a spongy mass, made up of air-tubes, air-cells, and blood-vessels, all bound together by cellular tissue.

The windpipe consists of the larynx, or organ of the voice, in the upper and most prominent part of the throat, which opens from the pharynx, just back of the root of the tongue; the trachea, a tube three or four inches long, made up of cylindrical rings and strong membrane, and its branches, or bronchia, which fork off to the right and left lung, and afterward divide like the branches of a tree, and are covered with masses of air-cells, into which they open, and which are clustered upon them like leaves on a tree, or more like grapes on a stem, the cells on each twig opening into each other. There are many millions of these cells, and the internal surface of the air-tubes and cells in the lungs is estimated at one hundred and fifty square feet, or ten times the surface of the body. Around each of these minute cells is a network of arterial and venous capillaries, and it is through the coats of these that the air acts upon the blood, giving it oxygen, and receiving from it carbon. There enter, then, into the structure of the lungs, the pleura, or external membrane, the air-tubes and vesicles, the arteries, the veins, the lymphatics, the nerves, and the areolar tissue, which holds them all together.

Fig. 17.



BRONCHIAL TUBE AND AIR-VESICLES.

Fig. 17 represents the bronchial tube and its division into air-cells, as much magnified. 1. A bronchial tube. 2, 2, 2. Air-cells, or vesicles. 3. A bronchial tube and vesicles laid open.

All the blood passes through the lungs, to be brought into contact with the atmosphere, their animal membranes forming no barrier to the chemical action of gases. This contact of the air with the circulating fluids is necessary to all organized beings — to vegetables and animals. In vegetables this contact takes place in the leaves, in fishes by the gills, in the higher animals by the lungs.

Liver. — The size of an organ is *some* measure of its im-

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portance. The liver is an irregular-shaped, brown mass, weighing four pounds in health, but often much enlarged in disease. It lies on the right side of the abdomen, under the diaphragm, opposite the stomach, and partly covered by the short ribs. The liver is a collection of a vast number of glands, each of which separates the bile from the blood. The blood thus purified is the venous blood gathered from the stomach and intestines, and which contains a portion of the nutritive matter. All these veins gather into one common vein, the vena porta, which enters and branches out in in the liver into minute vessels. The purified blood collects in another set, and goes to the ascending vena cava. The gall-bladder is attached to the liver, and serves as a reservoir for the bile, until it is needed in the process of digestion.

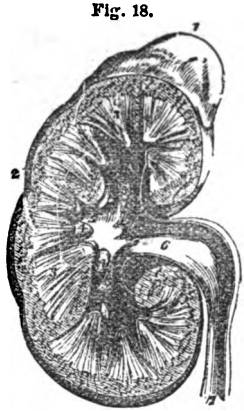
Spleen. — This is a large glandular organ, situated at the left of the stomach. It has no excretory duct, no known secretion. It is conjectured to be a large lymphatic gland. It is liable to inflammation, and to enlargement and hardening in malarious diseases.

Kidneys. — These are hard bodies, of a flattened, oval shape, lying on each side of the spine, near the last ribs. Each kidney is a collection of tubes and glands, ending in a central cavity, which opens into long tubes, called ureters. The office of the kidneys is to separate urine from the blood, which is conveyed by the ureters to the bladder.

This separation of the urine, or rather the solid matters it contains, from the blood, is so important a matter, that certain death attends its suspension for a short period.

Bladder and Urethra. — This is a membraneous and muscular pouch, resting against the pubes, in the middle, anterior portion of the pelvis. It terminates below in a tube, called the urethra, through which the urine

Fig. 18.



SECTION OF THE KIDNEY.

Fig. 18 is a section of the kidney, surmounted by the supra-renal capsule; the swellings on the surface mark its original constitution in distinct lobes. 1. Supra-renal capsule. 2. Vascular portion. 3, 3. Tubular portion, consisting of cones. 4, 4. Two of the papillæ projecting into their corresponding calices. 5, 5, 5. The three infundibula; the middle 5 is situated in the mouth of a calyx. 6. Pelvis. 7. Ureter.

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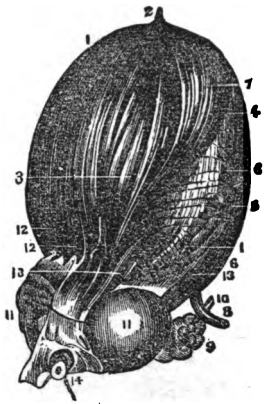
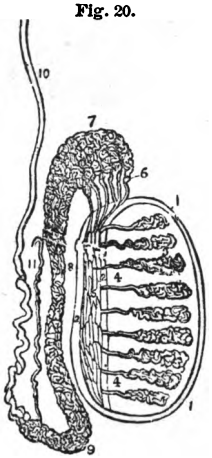
Fig. 19.



URINARY BLADDER.

Showing its muscular fibers. 8. Left ureter. 9. Left portion of seminal vesicles. 11, 11. Lateral lobes of the prostate gland. 14. Urethra tied with a cord.

Fig. 20.



ANATOMY OF THE TESTIS.

is discharged. In men, the urethra is eight or nine inches long, when at its full extent. In women, it is not more than two inches. The urine is retained in the bladder by a sphincter muscle at its neck.

Male Organs of Generation.—These consist of the testicles, or sperm-preparing organs, the seminal vesicles, the prostate gland, the penis, and their appendages.

The testicles are egg-shaped glands, each consisting of several hundreds of minute, convoluted tubes, ending in a single vessel, which conveys the semen or vitalizing fluid, secreted by these organs, into the seminal vesicles, where it is mingled with a secretion from the prostate gland, and is held in readiness to be ejected through the urethra, during the sexual orgasm.

The testicles, in an early stage of fetal development, are formed close by the kidneys, and gradually descend to the lower part of the abdomen, where they pass through openings, and are lodged in the scrotum, suspended between the thighs, and just below the penis. They do not always emerge from the body.

The prostate gland is a small body about the size and shape of a chestnut, just beneath, and partly surrounding

Fig. 20 represents the minute structure of the testis. 1, 1. Tunica albuginea. 2, 2. Mediastinum testis. 3, 3. The lobuli. 4, 4. Vasa recta. 5. Rete testis. 6. Vasa efferentia; six of them only are shown in the diagram. 7. Servi vasculosi, constituting the globus major of the epididymis. 8. Body of the epididymis. 9. Its globus minor. 10. Vas deferens. 11. Vasculum aberrans.

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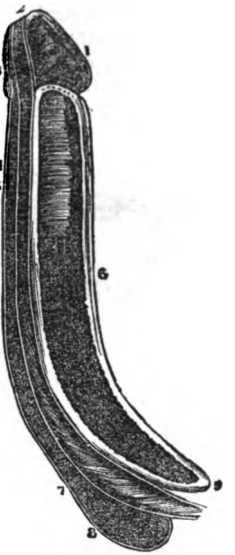
the neck of the bladder. (See Fig. 19.) Its secretion seems to be a vehicle for the semen.

The penis is, in many respects, a remarkable organ. Small in infancy, it attains at puberty to a length of from five to seven inches, and is about five inches in circumference. Its shape is that of a cylinder, not perfectly regular, with a soft, delicate cushion, called the glans penis, at the end. This is the most sensitive portion of the organ, and in performing the sexual function, is the seat of exquisite pleasure. A soft skin loosely covers the organ, so as to be movable, and to fall down in a fold, so as partly, and in some cases wholly, to cover the glans penis.

Fig. 21.

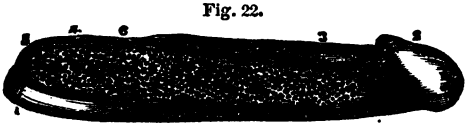


VERTICAL SECTION OF THE PENIS AND URETHRA.

1. Glans penis. 2. Orifice of urethra. 6. Corpus cavernosum. 8. Bulb.

The internal structure of the penis is very curious. In repose, it is small, soft, flabby, and easily compressible; but when in vigorous erection, it is distended, hard, and unbending. The change from one state to the other occurs in a moment, at a word, a thought, or a touch. The nature of this change has not been well explained. There is a rush of blood to the part, where it seems to accumulate; but this is probably not the fact. I believe that it is a peculiar nervous action, and it is the same as is seen in the lips, and particularly the nipples, under similar excitement. It is true that a turgid and stiffened state of the organ may be produced by putting a ring or ligature around it, but this is not a true erection.

Fig. 22.



ARTERIES OF THE PENIS INJECTED.

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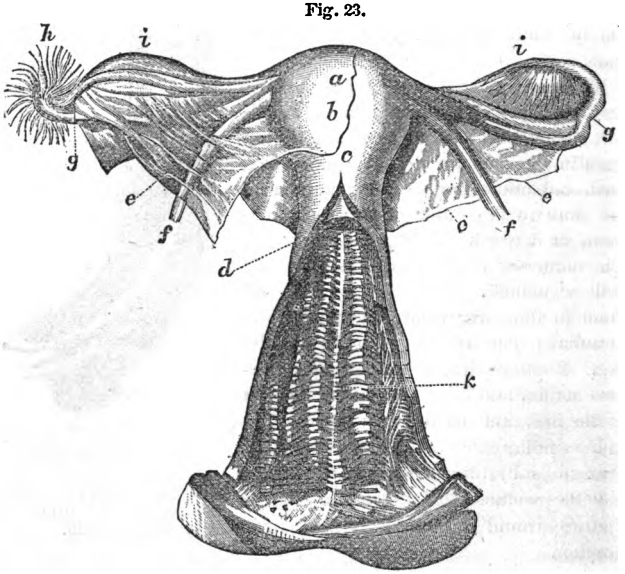
Female Organs of Generation. — These are mostly within the pelvis, and consist of the ovaries, or germ-preparing organs; the fallopian tubes, leading from the ovaries to the uterus, or receptacle of the germ, where it remains during the whole term of gestation; the vagina, or passage to the mouth of the womb, which receives the penis during the sexual congress; and the lesser and greater lips and clitoris, a very sensitive organ, resembling the penis, and situated above the entrance of the vagina. The mons veneris is merely a cushion of fat, covered with curling hair, and conveniently placed upon the pubes. It can scarcely be called an organ of generation, being a mere protection to the parts that might be injured by violent contact.

Fig. 23.



UTERUS, PART OF THE VAGINA, OVARIES, AND FALLOPIAN TUBES.

k. Vagina, dissected open. *d*. Os uteri, or mouth of the womb. *e, e, e*. Wide ligaments. *f, f*. Round ligaments, support of the womb. *g, g*. Fallopians, hollow tubes for conveying the egg to the womb. *h*. The fimbri, or entrance to the fallopians. *i, i*. The ovaries, for germinating the egg. *a*. The fundus uteri, or upper part of the womb. *b*. The body. *c*. The cervix uteri, connecting the vagina, or os uteri with the vagina.

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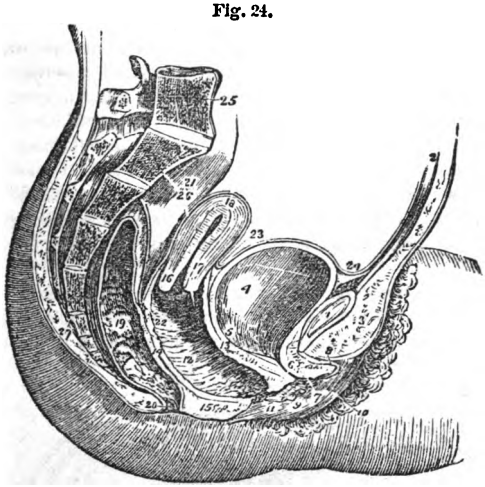
The ovaries are the most important of these organs. There are two, one on each side of the uterus, in the groin. They are nearly as large as the male testicles, and perform a corresponding function. When the germ, or ovum, has been perfected in the ovary, it is cast out, and seized by the extremity of one of the fallopian tubes, through which it is conducted to the uterus.

Fig. 24.



VISCERA OF THE FEMALE PELVIS.

Fig. 24 is a side view of the viscera of the female pelvis. 1. Symphysis pubis. 2. Abdominal parietes. 3. Collection of fat, forming the prominence of the mons veneris. 4. Bladder. 5. Entrance of the left ureter. 6. Canal of the urethra, converted into a mere fissure by the contraction of its walls. 7. Meatus urinarious. 8. Clitoris, with its præputium, divided through the middle. 9. Left nympha. 10. Left labium majus. 11. Meatus of the vagina, narrowed by the contraction of its sphincter. 12, 22. Canal of the vagina, upon which the transverse rugæ are apparent. 13. The thick wall of separation between the vagina and rectum. 15. The perineum. 16. Os uteri. 17. Its cervix. 18. Its fundus; the cavitas uteri is seen along its center. 19. Rectum, showing the disposition of its mucous membrane. 20. Anus. 21. Upper part of the rectum, invested by the peritoneum. 23. Utero-vesical fold of peritoneum; the recto-uterine fold is seen between the rectum and the posterior wall of the vagina. 24. The reflexion of the peritoneum, from the apex of the bladder upon the urachus to the internal surface of the abdominal parietes. 25. Last lumbar vertebra. 26. Sacrum. 27. Coccyx.

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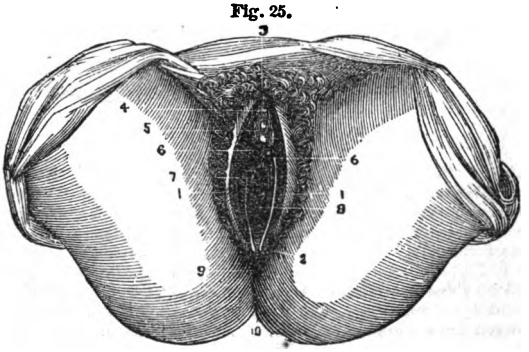
This organ is situated centrally in the pelvis, behind the bladder, before the rectum, and four or five inches from the mouth of the vagina. It is pear-shaped, with the neck downward, and opening into the vagina, which closes around it. Passing the forefinger up the vagina, its mouth can easily be felt, and the opening of the male urethra, in the glans penis, should exactly correspond with the mouth of the vagina, so that the semen may be injected directly into the uterus, which, in a healthy and harmonious orgasm, opens to receive it.

In its healthy, unimpregnated state, the walls of the uterus are about half an inch in thickness, muscular and vascular, and the cavity scarcely larger than a kidney-bean. After impregnation it expands so as to contain a fetus, weighing, in some cases, fourteen pounds, with membranes, afterbirth, and fluid weighing as much more. In cases of twins, where there are two fully-formed fetuses, and two placentas, the bulk is even greater. The uterus expands rapidly, and its minute and imperceptible arteries acquire great size; but in a few hours after birth, it contracts to nearly its previous dimensions.

The vagina is a membraneous canal, with muscular fibers, lined with a delicate mucous membrane, and forming the passage from the vulva, or external opening, to the uterus. It performs three

Fig. 25.



EXTERNAL FEMALE ORGANS OF GENERATION.

11. Labia majora, or large lips. 2. Fourchette, or fork. 3. Mons veneris. 4. Prepuce of the clitoris, around the glans clitoris. 5. The vestibule. 6. The nymphæ, or lesser lips. 7, 8. The hymen. 9. The perineum. 10. The anus.

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offices: it allows of the periodical flow of the menstrual fluid, and the passage of unfecundated germs; it admits the penis in sexual union, grasping it closely, and contributing to and partaking of the orgasm; and, finally, it admits of the passage of the fully-formed fetus at birth. Thus a canal, which will sometimes scarcely admit the finger, expands to receive an organ five or six inches in circumference, and, under a peculiar action of the system, is dilated to allow of the passage of the head of an infant, which is five inches in its largest diameter. The vagina is largely furnished with numerous glands, and, when healthy, is abundantly lubricated with a fluid like saliva, both in the sexual congress, and in the process of parturition.

The external organs consist of the inner or lesser lips, which are folds of the mucous membrane, called nymphæ, which seem to shelter and guard the entrance to the vagina; the greater or external lips, which are thicker and filled with fat, and which close over the inner. In some cases there is, in virgins, or those who have never performed the sexual function, a thin fold of membrane, partially closing the mouth of the vagina, called the hymen. When this exists, it may be torn, and bleed, in the first union; but it is wanting in so many cases, and may be distended or ruptured in so many ways, that it is scarcely reckoned a safe indication of virginity, even if that were a matter of importance to ascertain.

The clitoris, placed above the opening of the urethra, is a miniature, imperfect penis, capable of erection, and, in the sexual congress, receiving, from the friction of the parts where it is situated, the most vivid excitement of pleasure. This excitement may also be produced artificially, as in the male organ, but with great loss of nervous power, and, if habitual, it destroys the sensibility of the part, while it wrecks the health of the whole system.

The bosom, or mammary glands of the female, are closely connected with the generative organs in function and sympathy, partaking of the same excitements. The nipple, indeed, closely resembles the penis and clitoris.

Observations on Anatomy. — There is a multitude of facts in anatomy, which I have not thought necessary to the purpose of this work. The curious student will find them in many treatises. I give what I deem most important for the objects in view.

The average stature of men at birth is 1.64 feet (one foot and sixty-four hundredths); at two years, 2.60; at four, 3.04; at six, 3.44; at nine, 4.00; at fifteen, 5.07; at twenty, 5.49; at forty, 5.52;

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after which age it slightly diminishes, from the curving of the spine and solidification of cartilages. Women at birth are 1.61 feet; at two years, 2.56; at four, 3.00; at six, 3.38; at nine, 3.92; at fifteen, 4.92; at twenty, 5.16; at forty, 5.18.

The average weight is, of men at birth, 7.06 pounds; at fifteen, 96.40; at twenty, 132.46; at forty, 140.42. That of women is, at birth, 6.42; at fifteen, 89.04; at twenty, 115.30; at forty, 121.81.

Men and women at mature age weigh twenty times as much as at birth, and their stature is three and a quarter times greater.

A calcined human body weighs only eight ounces; mere drying reduces it to one tenth of its weight. Thus nine tenths of the whole body are water.

The nerves of sensation arise from the posterior column of the spinal cord, those of motion from the anterior. The fibers from the brain cross each other in the medulla oblongata, so that paralysis of the right side of the body corresponds with a diseased condition of the left side of the brain. What is called a nerve, consists of a great number of fibers, coming from different parts of the brain, spinal cord, or sympathetic ganglia, and going to various organs. Nervous fibers of motion, sensation, and organic life thus travel together in the same sheath.

The tongue has three kinds of nerves: those of motion, common sensation, and the special sense of taste, besides the nerves which preside over its own nutrition and secretions.

The skin, or external covering of the human body, is a vast network of areolar tissue, arteries, veins, lymphatics, nerves, and glands. By means of it we have the sense of feeling, sense of temperature, sympathetic impressions, the influence of light, of air, probably both oxygen and nitrogen, of aromas and miasms; and the skin constantly throws off the matter of perspiration, and absorbs water, when needed, from the atmosphere.

The true skin is covered by a horny, insensible covering, the cuticle, which wears off continually, and is as constantly renewed. The hair and nails resemble the cuticle, and are formed by a peculiar arrangement of flattened cells growing from the roots, and having no sensibility in themselves, but being surrounded at their roots by nerves of extreme sensibility.

The external skin is kept damp by perspiration, and of an oily softness, by a secretion from the sebaceous glands. The mucous membrane, lining all passages and cavities which open outwardly, secretes mucus; and the serous membranes, which surround the brain, heart, lungs, and other viscera, are kept moist and

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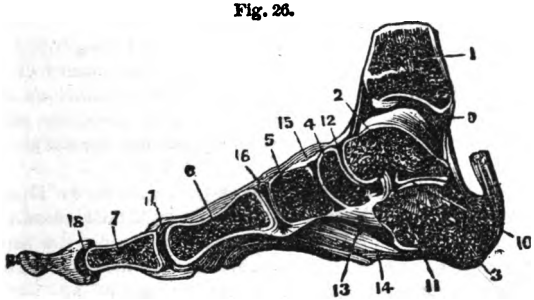
slippery by a constant secretion of serum. When this secretion is in excess, we have dropsy.

The joints are also provided with a membrane, called the synovial membrane; and its secretion, serum, with an unusual amount of albumen, like the white of an egg, lubricates every joint.

The eye is also constantly moistened with the secretion of the lachrymal gland, placed in the upper outer corner of the eye for that purpose.

All through the body, moreover, the arteries pour out a perspiration to keep the whole areolar tissue moist, and this is as constantly taken up by the veins. When the equilibrium of this process is disturbed, we have dryness and hardening of the tissues in one case, or edema, or general dropsy, in the other.

Fig. 26.



VERTICAL SECTION OF ANKLE JOINT AND FOOT OF THE RIGHT SIDE,

Showing the formation of joints, the synovial capsules, and ligaments. The references are not given, as difficult and needless to remember.

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CHAPTER II.

NATURE, CAUSE, AND TREATMENT OF DISEASE.

"Principles, not Receipts."

THE pathology, or doctrine of diseases in general, has been a subject of controversy in all ages of the world. A thousand different causes have been assigned for disease, and as many different modes of cure. Nor is the question at this day settled, or any better understood. We shall not here take up time, nor discuss this subject to refute either the ancient or modern doctrines maintained, any farther than we conceive they interfere with correct medical practice.

Theory and speculation are harmless while they do not lead to any pernicious course of treatment. But when they lead to erroneous practice, it becomes necessary to refute them.

We shall now inquire into the pathology or nature of disease, and lay down such principles as will lead to a judicious mode of treatment. In prosecuting this inquiry, no elaborate researches are deemed necessary. We have only to follow the simple path of truth, or reason and nature.

The Excretions THE ONLY OUTLETS OF DISEASE.— The Author of our existence has wisely established certain laws in the animal economy to guard and protect it against the inroads of disease, and, when formed, to remove it. By these laws we understand an inherent power of the system to throw off any and everything which is foreign or injurious, or such a process as brings about a healthy action on a diseased system. Let us now inquire in what manner this is performed. A little attention to the body shows us that there are certain outlets or excretions of the system, designed especially to carry off everything retained which is incompatible with health. When these excretions perform their offices, a person may be said to be well; but when they cease to act, or act imperfectly, morbific matter is retained, and derangement follows, which causes irritation, and, if not removed by the secretions, inflammation and suppuration ensue.

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I shall here briefly treat upon these several excretions, show their offices, and the consequences arising from their obstruction.

1. The Skin. — The whole body is covered and lined with this membrane, through which there are innumerable pores, or openings, destined to carry off everything which is not salutary or compatible with a healthy state of the system. The fluid which thus passes off is distinguished into sensible and insensible perspiration. By looking at any part of the body in the summer season with a microscope, vapor or steam may be seen to rise like a fountain, which, coming in contact with the atmosphere, becomes condensed, and falls down in the form of drops, which we term sweat or perspiration. When this is kept up, and continued, the blood is pure, being separated in this manner from every impurity. But when this perspiration becomes checked by cold, the humors engendered in the system are retained, carried into the circulation, settle upon some organ that is most predisposed to disease, and become a source of irritation. Every day's observation convinces us that the moment the pores become in any degree closed, a universal derangement succeeds: a sensation is felt in that part where such retained perspirable matter is thrown, as if a needle or some foreign substance was piercing it. This may be said to be the proximate cause of irritation.

It may be translated to the lungs, brain, kidneys, and other organs, causing inflammation and pain; or it may remain in the blood, and cause fever. This fact is demonstrated by the phenomena of eruptive disease, small-pox, measles, etc. The infection or contagion is taken into the blood through the medium of the lungs, and as soon as it becomes sufficiently impregnated with the specific humor or virus, nature is aroused, and makes a powerful effort or struggle to expel it from the system. As soon as she accomplishes this object, the poison in these eruptive complaints is thrown copiously to the surface, and appears in the form of vesicles or eruptions; and when they are thus expelled the fever immediately subsides, but will reappear, if, from debility or other causes, the poison or humors are absorbed. It is the case also in hectic fever, as almost every one knows. Matter from the lungs, or an ulcer, is taken into the circulation, and causes irritation and febrile excitement, and it is also proved from the termination of fever by sweat or perspiration, and also by fever sores. These facts reduce it to a mathematical precision, and render the subject so simple and plain, that it is really a matter of profound astonishment that any one the least acquainted with fever should be ignorant of its nature, cause, and cure, as well as that of other diseases.

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No doubt a preternatural accumulation of blood to such parts may serve as an auxiliary source of irritation; but, from various experiments, it may be shown that an accumulation of blood alone to any particular organ is not sufficient to account for all the phenomena of disease; but this subject will be further illustrated. It is also well known that fevers, inflammation, and a variety of other complaints immediately follow a check of perspiration.

Sanctorius proved that two thirds of the fluids taken into the system are discharged by the skin, which shows the danger that must arise when such fluids are retained. The whole external skin of the human body is in some measure a breathing organ, and is continually exhaling a vapor loaded with various excrementitious matter, and held in an aeriform state by the heat which passes with it from the body. This evacuation, if checked, so overtaxes other excretory organs as to produce disease, and, if retained on the surface and returned through the absorbents into the circulation, acts as a poison in the system. Frequent, if not daily, ablution or washing is necessary to preserve, in a healthy state, an organ of such great importance to the animal economy.

The perspirable matter thus thrown to the surface contains carbonic acid gas, and may be the exciting cause of irritation, fever, or other diseases. Every person the least acquainted with physiology must perceive that a departure from health must follow their obstruction.

2. The Bowels or Intestines. — The bowels or intestines are also designed by nature to carry off much that is noxious or injurious to the system, and which does not serve the purposes of health or nutrition. Hence the diseases that arise from their long constipation. It can not otherwise be but that such a great quantity of extraneous and feculent matter lodged in the body, and perhaps absorbed, must disorder it. The effluvia arising from the operation of physic is an evidence of the deleterious nature of retained alvine discharges.

Nature, therefore, expels disease very frequently by the intestines.

3. The Kidneys. — From the blood is secreted the urine, through the medium of the kidneys, and which is another excretion designed to rid the system of something extraneous, foreign, or morbific. When this excretion is checked, or if it does not duly perform its office, certain noxious matters are retained and mixed with the circulating fluid, and prove another source of morbid derangement, such as dropsy, inflammation of the kidneys, and how many other complaints it is difficult to decide. That diseases are carried off by

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a copious discharge of urine, every physician knows. The effects which arise from the suppression of urine point out the purpose for which it is designed.

4. The Stomach. — The stomach is another organ by which nature expels morbific agents. When violence has been done by overloading it, or when anything poisonous or dangerous has been received, or when any contaminated fluid is poured into it, or when it becomes unhealthy, or diseased from any cause whatever, the peristaltic or regular motion of it is inverted, *vomiting* commences, and its contents are discharged, its tone restored, and health follows. Thus we see that this organ is designed to eliminate deleterious agents, and constitutes, therefore, an important excretion.

5. The Lungs. — The lungs are another organ which serves the purpose of secreting from the blood offensive agents. They not only throw off carbonic acid gas, but likewise mucus; and when they become diseased, more especially, they cast off pus, which, if retained, would cause suffocation. Hence we see in pulmonary diseases an effort of nature to effect a cure through the medium of this organ.

Inasmuch, then, as health depends upon each and all of these performing their respective offices, it follows, that when any one becomes torpid, or ceases to perform its duties, that morbid excitement is the consequence; and this shows, in a most striking light, the proximate cause of most diseases at least; being nothing more or less than the retention in the system of morbific perspirable matter, producing irritation, morbid action, and a deviation from health. These humors are no doubt taken into the system through the medium of the air, food, or drink. The air breathed is returned loaded with watery vapor, which is calculated to amount to nearly twenty ounces a day, from which we learn the injurious effects arising from its obstruction.

Although the symptoms of complaints in general are very different, yet this is not owing to the exciting cause (this being similar), but to the peculiar structure, or the tissue of the organ which is the seat of the disease.

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PART II.

DISEASES, WITH THEIR PROMINENT SYMPTOMS.

CHAPTER III.

FEVERS.

WITHOUT argument with the "Profession" as to what *may be* the proper classification of the various complaints noted in the several chapters which follow, the reader will find all conveniently arranged, and easy of reference. Included in this chapter are,

1. One-Day.
2. Inflammatory.
3. Yellow.
4. Nervous.
5. Putrid.
6. Remittent.
7. Intermittent.
8. Symptomatic.
9. Small-pox.
10. Cow Kine-pox.
11. Chicken-pox.
12. Measles.
13. Scarlet Fever.
14. Erysipelas.
15. Miliary.
16. Plague.

1. **Ephemeral,** or **One-Day Fever,** some divide into three species: *acute, mild,* and *sweating.* These distinctions are of no practical use.

SYMPTOMS. — Rigors, slight stages of short duration; mental functions scarcely disturbed, terminating in a few hours in a moderate sweat. The disease often disappears with a single paroxysm, and seldom exceeds two or three. A slight cold, indigestible food, a debauch, over-exertion, etc., are the causes.

2. **Inflammatory,** may be called *High Fever,* to distinguish from *Typhus,* or *Low Fever.*

SYMPTOMS. — This form of fever is rather peculiar to vigorous constitutions, and to persons of active, out-door habits of life. It may be distinguished from all others by the following symptoms: tongue generally white, with red edges; pulse full, hard, *strong,* and quick, though never very frequent. Temperature of the body uniformly high, after the fever is fully developed; eyes reddish; urine scanty and high-colored; the whole surface preternaturally flushed and turgid; the mental functions but slightly or never disturbed.

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If this fever runs much beyond the ninth day, or if maltreated, the tongue becomes yellow, then brown, then black, and many symptoms of an original typhoid supervene. Like all continued fevers it is characterized by two exacerbations during the day: the first and mildest in the forenoon, and the second and severest toward evening.

3. **Yellow.** — Yellow Fever is generally regarded as peculiarly contagious, though, I think, quite erroneously. Some authors place it among the remittents, on account of the peculiar remission which occurs during its progress.

Symptoms. — Partial or general yellowness of the skin; paroxysms somewhat irregular; great tenderness or pain about the epigastrium, or pit of the stomach; type irregular, which irregularity consists in a marked remission of the febrile symptoms, occurring during the first day or two, usually about forty-eight hours after their access. In severe cases the eyes are intensely red; there is extreme pain in the eyeballs, back, and limbs. The *black vomit*, so alarming to friends and physicians, does not always take place, and when it does happen is owing more to mal-practice than to other causes.

4. **Nervous.** — This has been called "mild typhus," "low typhus," and "slow fever." It usually runs from six to eight weeks, under allopathic management.

Symptoms. — Great disturbance of the mental functions; dejection of mind; frequent, weak, irregular pulse; tongue covered with a white, thick mucus; eyes suffused; heat of the surface more or less unequal; frequent turns of muttering delirium; countenance peculiarly expressionless; the skin liable to irregular dryness and sweats; the early symptoms are mild, and increase in violence gradually; the evacuations are not particularly offensive; the urine is commonly whey-like.

5. **Putrid.** — This is a more violent and malignant form of typhus than the preceding. Jail, camp, ship, hospital, and several other fevers, usually considered as distinct species, are but modifications of the putrid form of typhus.

Symptoms. — Attack sudden; progress rapid; rigors severe; early and great prostration of strength; extreme anxiety and restlessness; the countenance expressive of anguish and horror; pulse hard, but small and rapid; tongue dry and brown or black; skin imparts more or less of a peculiar stinging, prickling, or burning sensation to the touch; breath hot and offensive; there is ringing in the ears; throbbing of the temples; intense headache; ferrety redness of the eyes; the excretions of urine and feces are dark and offensive. In the advanced stage, spots or blotches appear on the skin, from

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effused blood, forming petechiæ, maculæ, vibices, etc. There is great exhaustion of muscular power, and the face wears a livid instead of a florid flush.

6. **Remittent.** — Remittent Fever is distinguished from continued, by being attended with only one daily exacerbation of the febrile paroxysm, instead of two; there is also a greater remission of all the febrile symptoms at the end of the paroxysm, though this remission is not complete, as it is in intermittent fever. The remittent type of fever is common to hot climates, but rare in the temperate. It is also especially prevalent in low, marshy districts.

All the general and special directions for treating the different forms of continued fever will equally apply to the same forms of remittent. It should be remarked that many cases of remittent fever — and the same is true of typhus fever — do not, on their first access, exhibit distinctly either the nervous or putrid type, although they always conform more especially to one or the other, as they progress. In all these cases the character of the fever will approximate inflammatory synochus, or *high fever*, and should be managed accordingly.

7. **Intermittent,** or Fever and Ague, seems to be especially connected with congestions in, and functional derangements of, the liver and spleen. Enlarged livers and spleens, called ague cakes, are very common sequelæ of intermittents, although they are not unfrequently detected after protracted or repeated remittents. What are called "chill fever" and "dumb ague," are disguised or imperfectly developed forms of intermittent. This disease is common to miasmatic localities and new countries, where decomposing vegetation abounds; and places where the dense foliage and stagnant waters fill the air with carbonaceous and hydrogenous gases, are much more subject to it than those which have been longer under cultivation. It is very prevalent in many parts of our Western States; and with the bad living which helps to produce it, and the huge doses of calomel, arsenic, and quinine given to cure it, a large proportion of those who "westward follow the star of empire," find their constitutions irretrievably ruined.

Symptoms. — The intermittent type of fever is readily distinguished by the violence of the paroxysm, the regular succession of the cold, hot, and sweating stages, and the complete subsidence of all the febrile phenomena at the end of the sweating stage, this subsidence amounting to a periodical intermission of the disease. It also exhibits a variety of forms, as *quotidian ague*, having an intermission about every twenty-four hours; *tertian ague*, the intermission about forty-eight hours; *quartan ague*, intermission about

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seventy-two hours; to which some authors add sub-varieties, called *irregular* and *complicated*. These distinctions, however, do not affect the question of treatment.

8. **Symptomatic Fevers,** depending on a local pathological condition, will be particularly considered under the heads of the idiopathic diseases, of which they constitute the symptoms.

9. **Small-pox.**—The Small-pox is a contagious, eruptive fever, affecting both the skin and mucous membrane of the mouth, throat, stomach, and lungs. Its access is a fever; this is followed in three or four days by an eruption, which is *papular* at first, then *vesicular*, and lastly *pustular;* the pustules are *pointed* at first, but afterward become *umbilicated*. The eruption terminates in twelve to seventeen days in desiccation and scabbing, leaving larger or smaller irregular cicatrices.

Character.—This disease appears in three forms: 1. Distinct Small-pox; 2. Confluent Small-pox; 3. Modified Small-pox. The *first* variety is the mildest; the eruption is regular, the vesicles distinct, and the fever of the inflammatory type. The *second* variety is the most severe; the vesicles are irregular and mixed, and mature imperfectly, and the accompanying fever is typhus. The *third* variety is the small-pox as modified by vaccination, or a previous attack.

Symptoms are many, and differ in various constitutions generally. The attack is characterized by the usual premonitory symptoms of a violent fever, as chills or rigors, lassitude, headache, pain and weakness in the back and loins, tenderness about the pit of the stomach, frequent nausea and vomiting, drowsiness, sometimes stupor or coma, and with infants convulsions are frequent occurrences. These symptoms are succeeded by general heat of the body, dry skin, coated tongue, frequent pulse, and extreme restlessness, which continue until the eruption appears, when they partially subside.

The diseases with which small-pox is liable to be confounded, especially in its early stages, are Chicken-pox (*varicella*), Measles (*rubeola*), Scarlet Fever (*scarlatina*), and Erysipelas. Variola may be distinguished from chicken-pox by the pimples appearing on the back, the maturation of the pustules on the third day, and the absence of suppuration and indentation, which characterize the latter disease: from measles, by the hoarseness, moaning, swelled eyelids and watery eyes, which attend the attack of measles, and the eruption appearing in crescentic clusters, not rising into visible pimples; from scarlet fever, by the strawberry appearance of the

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tongue, and the bright scarlet efflorescence of the skin, which usually appears on the second day, in the latter disease; and from erysipelas, by the eruption or efflorescence being of a florid red color, and spreading from a particular point over a large surface, in the case of erysipelas.

10. **Cow-pox — Kine-pox.** — The vaccine matter (which, to a certain extent, prevents small-pox) is usually inserted under the cuticle, by three or four punctures in one or both arms. On the *second* day small, red, hard spots appear, which increase sensibly on the *fourth*, and on the *fifth* become small pearly vesicles, soon after surrounded by a pink or crimson flush. On the *seventh* or *eighth* day the areola becomes circular or angular, and about an inch in diameter. The vesicle is uneven, with a central depression. On the *ninth* day the flush is increased, hard, and tumid, often attended with an erythema over the arm or whole body. About the *tenth* day there is a slight febrile paroxysm. On the *eleventh* or *twelfth* day the redness diminishes, the centre of the vesicle is covered with a brown scab, which comes off about the twentieth day, leaving a deep, circular indentation, about an inch in diameter, with as many pits as there were cells in the vesicles.

The vaccine virus is usually selected from the fifth to the twelfth day.

This disease requires no medication, save what is due to personal cleanliness, and "temperance in all things."

11. **Chicken-pox — Swine-pox — Bastard-pox,** etc. — This disease is characterized by slight feverishness, followed, within *twenty-four hours*, by an eruption of small, reddish pimples, appearing first on the back, very much resembling the first appearance of the eruption of small-pox. On the *second* day, the pimples become small vesicles filled with a colorless or yellowish fluid; soon after a thin scab forms at the top, without pus. About the *fifth* day the eruption disappears, without leaving any mark or cicatrix.

12. **Measles.** — Nosologists divide this disease into two species — the *common* and the *malignant*. The first species is the mild form; the second is the violent.

Symptoms. — The early symptoms resemble catarrh, or influenza — cough, hoarseness, difficulty of breathing, frequent sneezing, itching of the face, smarting of the eyes and eyelids, nausea, thirst, etc. The eruption first appears on the *fourth* day, consisting of small red points on the face, thence extending downward over the body.

The fever rather increases with the eruption, and is attended with

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pneumonic symptoms, as cough, soreness of the chest, and oppressed respiration. It usually abates considerably at about the end of the first week.

In the *malignant* form the eruption is earlier and more irregular, often receding and reappearing, and of a dark or livid hue; the abdomen is very tender, the head is delirious or comatose, the lungs are inflamed, and diarrhea and convulsions often occur.

13. **Scarlet Fever.**—This appears in three distinct forms: 1. *Scarlatina simplex* (simple scarlet fever). 2. *Scarlatina anginosa.* 3. *Scarlatina maligna.*

Symptoms.—After the ordinary premonitory symptoms of general fever, a bright scarlet efflorescence appears, usually on the *second* day, first on the face, neck, and breast, extending downward over the trunk and limbs. At first the eruption consists of innumerable red points, between which the skin exhibits the natural color; these spots finally coalesce, so that in a few hours the red flush is universal. On pressure, the skin looks pale, but readily recovers its redness when the pressure is removed. In *one* or *two* days more, the efflorescence again becomes partial, and is disposed in large, irregular patches, which do not disappear on pressure. The skin feels rough to the touch, and is occasionally studded with small miliary vesicles. About the *fifth* day the rash begins to decline, is indistinct on the *sixth*, and generally disappears wholly by the *eighth*. Desquamation of the cuticle commences about the end of the fifth day on the parts first affected, now extending over the body. On the trunk and limbs the cuticle comes off in the form of scurf, and from the hands and feet in large scales. At this time the mucous membranes are more or less affected. The eyelids, lips, edges of the tongue, nostrils, and palate exhibit a bright red color, the tonsils are enlarged, and there is difficulty in swallowing. The fever disappears with the rash.

Such is scarlet fever in its mild form. The *anginosa* variety is characterized by more severe general symptoms: dejection of mind, pain in the head, soreness and stiffness of the muscles of the neck. On the *second* day, hoarseness, difficulty of swallowing, hurried breathing, interrupted by frequent sighing, breath hot and burning to the lips, heat of the surface very great, weak and frequent pulse, pungent, prickling pains. On the *third* day the face, neck, and breast appear redder than usual, or scarlet patches appear about the mouth and nose. The submaxillary glands are enlarged and painful, the palate, tonsils, and pharynx are reddened, specks and collections of thick mucus are observed about the mouth and throat. In a few

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hours an intense redness prevails over the whole body, which is perfectly smooth to the touch. On the *fifth* or *sixth* day the deep scarlet is succeeded by a brown color, the skin becomes rough, and peels off in small scales.

The *malignant* form has been extensively known by the name of *putrid sore throat*. It is distinguished by intense inflammation of the throat at the outset, soon proceeding to deep ulceration and extensive sloughing. All the salivary glands are much enlarged, the eruption appears later in irregular patches, often disappearing suddenly. The general symptoms are all indications of the worst or putrid form of typhus fever.

14. **Erysipelas—St. Anthony's Fire.**—This affection has been divided into *idiopathic erysipelas*, produced by the general causes of fever, and *traumatic erysipelas*, resulting from wounds and injuries. The latter species frequently follows surgical operations performed on persons whose systems are gross, and whose blood and secretions are very impure. For therapeutic purposes these distinctions are unimportant.

Symptoms.—After the usual febrile chills, nausea, vomiting, etc., the patient is affected with great confusion of the head, amounting often to delirium or coma; the tongue is *moist*, and *uniformly white;* the pulse full, frequent, and compressible. About the *second* or *third* day some portion of the skin exhibits a florid red color, from which the efflorescence spreads gradually, being bounded by a distinct margin, slightly elevated. The efflorescence extends until it occupies a large surface, attended with considerable swelling, and a peculiar acrid heat of the inflamed parts. When the face is the part principally affected by the efflorescence, the eyes are often closed by the swelled eyelids, and the whole hairy scalp is more or less inflamed. The efflorescence terminates in a few days, the time varying considerably, in the formation of vesicles, or in desquamation of the cuticle. The fever has the usual daily exacerbations of the continued type, but rarely manifests any marked remission until the eruption ceases to spread, from which time, in favorable cases, convalescence commences.

No two diseases are more intimately connected with bad dietetic habits than erysipelas and scarlet fever. Both are very prevalent where swine food, greasy sweet-cakes, and concentrated preparations of food are plentiful. Sudden changes of temperature operating on a system inflamed by gross or obstructed by constipating aliment, seem to be the principal circumstances on which these forms of eruptive fever depend.

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This disease, medical books tell us, often terminates in a dropsical swelling (*erysipelas œdematodes*); deep-seated ulceration of the cellular membrane (*erysipelas gangrænosum, metastases*) to internal organs; and sometimes it suddenly disappears in one part and attacks a distant one (*erysipelas erraticum*). These sequelæ, however, like those of all the other exanthemata, are, to a much greater extent, attributable to injudicious treatment, or drug treatment, than to all other causes combined.

15. **Miliary.** — This disease takes its name from the resemblance of its vesicles to the grains of millet. Some authors group a variety of similar rash-exanthems under the general term of miliaria. An eruption similar to that of miliary fever often appears in the course of other acute diseases, when the patients have been kept in hot, unventilated apartments, or dosed excessively with hot, stimulating drinks.

Symptoms. — With the ordinary accessory symptoms of fever, there is laborious breathing, frequent sighing, great debility, depression of spirits, restlessness, wandering pains, followed sooner or later by a profuse sweat, of a sour, rank odor, accompanied with a troublesome itching or pricking of the skin. The sweat may appear in *two*, *three*, *four*, *five*, or *six* days. At length, at an uncertain period, an eruption appears on the neck and breast of small red papulæ, about the size of millet seeds; these gradually extend downward, over the trunk and extremities. The pimples do not become prominent to the eye, yet feel elevated to the touch. Often their redness disappears, leaving them of the color of the skin. After *ten* or *twelve* hours, a small vesicle appears upon the top of each papula, at first of a whey color, usually turning gradually white. Sometimes the vesicles remain red, and sometimes red and white vesicles are intermixed, but always have a strong, rank, offensive smell. In *two* or *three* days more the vesicles break, and are succeeded by small crusts, which soon fall off in scales. The febrile symptoms do not subside when the eruption appears, but after a variable interval. Miliary fever is easily distinguished from all others by the profuse sweating, attended with the fetid odor, and this being followed by the peculiar eruption.

Note. — Some authors treat of "*gastric*," "*mucous*," and "*catarrhal*" fevers. These are merely complications of some of the forms of fever already described, with prominent symptoms of indigestion, biliousness, cold in head, etc.

16. **Plague.** — "The plague was first known in English history in 430, and lastly in 1679. In 302 it raged over Syria. In

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540, and for half a century afterward, it prevailed extensively over Europe and Asia. Since 1645, when it last visited Edinburgh, it has repeatedly ravaged all the continent of Europe. Marseilles was ravaged by it in 1720, and in the course of the seventeen preceding centuries it experienced twenty-seven visitations. It prevailed at Moscow in 1771 and 1772; at Noja, in 1815 and 1816; in the lazaretto of Venice in 1818; at Malta, in 1813; and at Gressemberg, in Silesia, in 1819. Lately it has been confined to the northern parts of Africa, where it is reputed to have originated.

"The history of the plague, like that of the cholera, is a tremendous lesson, whose true moral is hygiene, unfortunately, however, but little understood, and still less heeded. Wherever and whenever it has raged, the place and the people were buried, as it were, in their own filthiness, and rioting in the grossest sensuality. The narrow streets, dirty houses, unventilated apartments, and gross food of the inhabitants, with drunkenness and debauchery, have ever been the *inviting* causes of this pestilence in all the cities of the Old World where it has ravaged and desolated. Athens, Rome, London, which were formerly more than at present the world's great centers of luxury and licentiousness, have been repeatedly scourged with this prince of pestilences. Since the habits of the civilized world have become more cleanly, yet more debilitating, we have internal dyspepsias instead of external carbuncles, and the cholera instead of the plague.

"The character of the plague is that of a malignant exanthem; a typhus fever of the putrid form, attended with carbuncular and imperfectly suppurating tumors, sometimes running into deep gangrenous ulcers, the patient often feeling as if burning up with internal fire."

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CHAPTER IV.

INFLAMMATION OF THE VISCERA.

In this chapter we shall treat only of *acute* inflammatory affections of the viscera. Visceral inflammations may be defined as general fever with disproportionate local affections, and are grouped as follows: —

1. Brain.
2. Throat.
3. Larynx.
4. Trachea (Croup).
5. Parotid Gland (Mumps).
6. Lungs.
7. Heart.
8. Liver.
9. Spleen.
10. Stomach.
11. Bowels.
12. Peritoneum.
13. Kidneys.
14. Bladder.
15. Uterus.
16. Testes.

Varieties of Inflammation. — Various circumstances conspire to modify inflammatory affections, so much so as to allow of their division into several well-marked and distinctive kinds. Peculiarity of constitution, the structure of the part or organ, the nature and violence of the predisposing and exciting causes, are the most prominent of these circumstances. Inflammation, tending to suppuration in a defined limit, as in the case of boils, abscesses, etc., is called *phlegmonous*. That form which is attended with eruptions, efflorescences, rashes, extensive ulcerations, rapidly spreading gangrene, etc., is called *erysipelatous*, or erythematous. When it tends to the formation of a preternatural membrane over the mucous surface, as in croup, tubular diarrhea, catarrh of the bladder, catarrh of the uterus, etc., it is called *membranous*, or *membranific*. When it affects mainly the glandular structures and mucous or serous membranes, without febrile symptoms in the early stages, as in tubercular consumption, internal dropsy of the head, and swellings of the conglobate glands, it is called *strumous* or *scrofulous*. When confined mostly to the structures of the joints, as in gout and rheumatism, it is called *arthritic*.

Inflammation is also divided into *acute*, *subacute*, and *chronic*. The first is attended with general fever; the second is accompanied with occasional febrile paroxysms; the last is without constitutional febrile disturbance.

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1. **Inflammation of the Brain.**—This disease is also sometimes called *phrensy*. Some authors distinguish it into two forms; but as the disease, whichever structure is primarily affected, soon involves both, this distinction has no practical utility.

SYMPTOMS.—Acute or excruciating pain in the head, throbbing of the temporal and carotid arteries, flushed face, eyes injected and brilliantly reddish, contracted pupil, and a wild expression of countenance, characterize the disease when fully formed. These symptoms are preceded by various cerebral and febrile disturbances, sometimes violent delirium, at other times nausea and vomiting, or general convulsions. The bowels are usually extremely costive. There is also great intolerance of light and sound, incessant watchfulness, the skin is dry and hot, the pulse hard and quick, the tongue is dry and covered with a white fur, and there is intense thirst.

2. **Inflammation of the Throat** (QUINSY).—Under this head are included four distinct forms of inflammation.

SYMPTOMS.—It consists of a swelling of the mucous membrane of the fauces and tonsils, by which the functions of swallowing, respiration, and speech are performed with great pain and difficulty; the accompanying fever is violent, and the disease terminates in a few days by resolution or suppuration. The second form is known as the *malignant*, or *ulcerated sore throat*. The attending fever is typhoid; the fauces exhibit a crimson flush, with ulcerations covered with mucus, and spreading sloughs, of an ash or whitish hue. This form is frequently epidemic. In the third variety the redness is more florid, and is most violent at the lower part of the fauces; the swallowing is extremely painful and difficult. The fourth variety has been called *quinsy of the esophagus;* the difficulty in swallowing is felt below the pharynx, and the food is generally rejected when it reaches the seat of obstruction.

These forms of throat disease are most common in spring and fall, showing that sudden changes of weather, or "taking cold," are their principal exciting causes.

3. **Inflammation of the Larynx.**—This disease, in some of its symptoms, resembles quinsy, and in a still greater number, the croup. It consists in a suppurative inflammation of the membranes of the larynx, extending backward to the membrane common to itself and the esophagus, between which purulent matter is often formed. It is a disputed point whether Washington, in his last illness, was attacked with this disease or common quinsy; but it is certain that he died of antimony and the lancet.

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SYMPTOMS. — After the ordinary symptoms of fever, the voice becomes hoarse and indistinct; the breathing laborious, with a painful sense of constriction in the throat; the fauces are swelled and turgid, the swelling extending to the face and eyes, the latter sometimes protruding as in cases of strangling; the pulse is frequent, the tongue furred, and every attempt to swallow is attended with great distress, the muscles of deglutition being thrown into violent spasms, threatening the patient with instant death from suffocation.

4. **Inflammation of the Trachea** (CROUP). — This disease consists of a peculiar inflammation of the mucous membrane of the trachea, or windpipe, attended with a thick, tenacious, glairy secretion, which hardens, if the disease is not soon arrested, into a preternatural membrane, and produces death by closing up the air-passage in the larynx. In some few instances, however, it has been expectorated. A similar membrane is also sometimes formed in the bowels, bladder, or uterus, and cast off in the form of a tube, or of fragments resembling, and sometimes mistaken for portions of the mucous membrane.

SYMPTOMS. — The *first stage* is denoted by a ringing cough, to which many children are subject on taking cold, attended with little or no change in the breathing or voice. This may be called the premonitory stage. In the *second stage* there is a shrill, ringing cough, with difficult breathing; the voice is altered, hoarse, and broken; the breathing is sometimes hissing, and at other times creaking or crowing; the eyes are heavy, watery, and bloodshot, and many patients die before the disease progresses further. In the *third stage* the cough and voice are stridulous, the respiration is laborious and suffocative, and the case is generally regarded as hopeless. The cheeks, eyes, and nails manifest a purple redness; the complexion is often mottled, or the flush of the cheek is circumscribed; the pulse is very small and frequent. In the *fourth stage* the voice is whispering and low; the cough less frequent and scarcely audible across the room; the trachea is coated with effusion; the face is leaden, the eye filmy, and the extremities cold, and final insensibility is gradually closing the scene.

The croup attacks children between the ages of one year and twelve, though occasionally it occurs in infants at the breast; and very rarely in adults.

5. **Inflammation of the Parotid Gland** (MUMPS). — The Mumps consist of a painful, unsuppurative swelling of one or both parotid glands; it is contagious, and often epi-

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demic; it is often accompanied with swelling of the testes in males, and of the breasts in females.

SYMPTOMS. — The tumor is at first movable, but soon becomes diffused to a considerable extent; it increases till the fourth day, and often involves the maxillary glands in the inflammation. It is attended with but slight febrile disturbance, and gradually declines after the fourth day.

6. **Inflammation of the Lungs** (LUNG FEVER, PLEURISY). — Medical authors apply the term *pleurisy* to the disease when it primarily attacks the pleura; and the term *pneumonia*, or *pneumonitis*, when the primary attack appears to be in the parenchyma, or substance of either or both lungs. The term *peripneumonia notha*, or *bastard pneumonia*, has been given to a modification of the disease, attended with a low, typhoid fever of the nervous type, which has sometimes prevailed as an epidemic. Practically, all these distinctions are useless; for whether the inflammation first affects the investing membranes or the substance of the lungs, it soon involves both; and precisely the same treatment is indicated whether we call it one or the other of these technical names.

SYMPTOMS. — Sometimes the constitutional symptoms appear first, as rigors, flushed, purplish face, injected appearance of the eyes, furred tongue, etc., and sometimes the local symptoms precede; these are great heat and sense of weight about the chest; dull, deep-seated, or acute pain; short, and dry cough, with a slight mucous expectoration; frequent, short, and anxious respiration. In a day or two the expectoration becomes viscid, and more or less rusty-colored, yellow, or bloody. The pulse is full, strong, and quick, or small, weak, and frequent, as the fever approximates the inflammatory or typhoid type.

This disease terminates by *resolution*, *suppuration*, *gangrene*, *effusion*, or *hemorrhage*.

7. **Inflammation of the Heart.** — Whether the muscular substance of the heart is ever the seat of an inflammatory affection which is capable of distinct recognition, is a disputed point. But inflammation of its investing membranes, though a rare disease, is recognized in all standard works; as *pericarditis*, — inflammation of the heart-purse, or pericardium; *endocarditis*, — inflammation of the internal membrane which lines the cavities of the heart. For all practical purposes, they may all be considered as simply inflammation of the heart.

SYMPTOMS. — With general febrile disturbance there is more or less acute pain under the left nipple, toward the lower extremity of

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the breast-bone; this pain radiates toward the left armpit, and sometimes extends downward to the elbow or wrist; the pain is increased by pressing upward against the diaphragm, and by lying on either side. The pulse may be full, hard, regular, and jarring, or small, rapid, unequal, and intermitting; there is great difficulty of breathing, an insupportable sense of oppression, frequent sweats, often alternated with very dry and hot skin. The countenance is pale, sharp, and marked with great anxiety and terror; sighing, sobbing, and hiccough are frequent, and sometimes delirium, convulsions, or insomnolence attend.

8. **Inflammation of the Liver.** — Acute inflammation of the liver, is, in this climate, a rare disease; but is rather frequent in hot countries, especially with those who indulge freely in flesh-eating and spirit-drinking.

Symptoms. — Pain in the right side under the short ribs, increased by a full inspiration, or by lying on the left side; dry, husky cough, shortness of breath, shooting pains about the chest, sympathetic pain in the right shoulder, yellow appearance of the white of the eye, and sometimes yellow skin; the urine is high-colored, and there is either costiveness or diarrhea.

Chronic inflammation of the liver — *hepatitis chronica* of the books — often manifests some degree of most of the symptoms above-mentioned, but is distinguished by the absence of general fever.

9. **Inflammation of the Spleen.** — This is an exceedingly rare disease. It is known by severe pain in the left side opposite the liver, with a sense of heat and weight, and considerable fullness and tenderness; the pain is increased on pressure.

10. **Inflammation of the Stomach** has two forms, *adhesive* and *erythematic*. In the former variety the fever is high, or inflammatory; in the latter, low, or typhoid.

Symptoms. — With general fever there is severe fixed pain and burning heat at the pit of the stomach; painful deglutition; the pain is increased by pressure over the stomach; frequent vomiting, hiccough, sudden and extreme prostration; hard, wiry, rapid, and often irregular and intermitting pulse; intense thirst; restlessness and anxiety; tongue red, parched, and of a glazed appearance. Frequently the inflammation extends to the bowels, attended with diarrhea and great tenderness of the abdomen.

11. **Inflammation of the Bowels.** — This disease, like gastritis, is divided into the *adhesive* and *erythematic* varieties. The former variety is attended with obstinate constipation; the latter with diarrhea.

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SYMPTOMS. — With more or less of general fever there is acute pain in some part of the abdomen, gradually extending over the whole; the pain is increased by pressure, and accompanied with tension and swelling. The patient lies on the back with the knees drawn up, and can scarcely suffer the weight of the bed-clothes. The bowels are usually obstinately constipated, but sometimes diarrhea attends; and there is constant nausea, and more or less vomiting of bilious and sometimes of highly offensive fecal matter. The pulse is frequent, hard, and contracted.

12. **Inflammation of the Peritoneum.** — SYMPTOMS. — The usual accessory symptoms of general fever are succeeded by a sense of heat and pain in the abdomen, usually confined to one part, but gradually becoming diffused. There is great tenderness or soreness of the belly, without inclination to go to stool, and a considerable degree of tension and swelling comes on, which ordinarily increases for several days; the patient finding most relief when lying motionless on the back, with the knees somewhat elevated. The tongue is not much altered at first; the pulse is small, weak, and very frequent. This disease frequently attends as a symptom of puerperal fever, which fever is generally the result of bad management during the period of childbirth.

13. **Inflammation of the Kidney.** — SYMPTOMS. — General fever, pain in the region of the kidney, extending to the groin and along the ureter to the neck of the bladder. The pain is deep-seated, often dull and obscure, but always increased by the erect posture, by coughing or sneezing, or by firm pressure. It is also increased by straightening the leg of the affected side. To avoid this the patient instinctively reclines on the affected side, and bends the limb so as to relax the muscles of the groin. There is frequent desire to urinate, with great difficulty or inability to expel the contents of the bladder. The urine is generally bloody at first. The tongue is white, the pulse is hard and frequent, the bowels are constipated, the abdomen is tympanitic, with wandering pains, and the patient labors under great depression of spirits.

14. **Inflammation of the Bladder.** — Idiopathic inflammation of the bladder does not often occur. It does, however, sometimes result from the common causes of inflammation, but is more frequently the consequence of gravel, stone, long retention of urine, maltreated gonorrhea, and such drug irritants as cantharides, ardent spirits, turpentine, and various essences and balsams.

SYMPTOMS. — General fever; acute pain, swelling, and tension in

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the region of the bladder; pain and soreness increased by pressure above the pubes, or in the perineum; vomiting; tenesmus; frequent micturition, with great difficulty in discharging the urine; heat and smarting in the urethra; great general irritation, restlessness, and anxiety.

15. **Inflammation of the Uterus.** — This disease has been divided into two varieties — *simple*, when occurring in the unimpregnated organ, and *puerperal*, when attacking the womb soon after delivery.

Symptoms. — Nearly every symptom characterizing inflammation of the bladder attends also inflammation of the uterus; in the disease under consideration there are the additional symptoms of pain extending with great severity to the loins, and shooting down the thighs, and an increase of pain in the hypogastric region, on the patient's making a deep inspiration. There is also a sense of weight and bearing down, with a frequent, small, and wiry pulse. Suppressed menstruation, extraordinary mental emotion, astringent or irritating injections, are usually the causes.

16. **Inflammation of the Testes.** — This affection is readily known by the pain, heat, redness, and swelling of the part affected; it is attended with more or less general fever.

CHAPTER V.

INFLAMMATIONS — ARTHRITIC.

Arthritic inflammation includes the various forms of Gout and Rheumatism.

The peculiarity of this kind of inflammation consists in its being confined mainly to the fibrous tissues — the muscles and structures around the joints.

We include in this chapter the following: —

1. Gout. 2. Rheumatism.

1. **Gout.** — The predisposing cause of a gouty diathesis, when it first forms itself in an individual, is plethora, or the state of the system produced by full living, indolence, etc.

Symptoms. — Gout is characterized by a violent inflammation and swelling of the joints, enduring for several days, and gradually

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subsiding with itching and desquamation of the cuticle. It usually comes on an hour or two after midnight, with excruciating pain in the joints of the great toe, which grows worse as the day advances, gradually ceasing toward evening, to return with more or less violence the next morning; and so on for several days. The attack is preceded by various symptoms of digestive derangement, and with coldness, numbness, and cramps of the extremities. The head, heart, or lungs may also be affected, producing the results named in the preceding remark. The *misplaced* variety is denoted by an inflammatory affection of some internal part or organ in a gouty diathesis, whether preceded or not by an inflammatory affection of the smaller joints, which, however, always very soon disappears. Gout may be distinguished from rheumatism by its commencement in the small instead of the large joints; also by the peculiar manner of attack.

2. **Rheumatism.** — Like gout, rheumatic affections are almost invariably connected with derangements of the digestive apparatus, and generally preceded by unusual disturbance in the functions of the primary nutritive organs. Some authors, indeed, maintain that gout and rheumatism are convertible maladies, often blending together, or running into each other, in their varied local manifestations. In fact, rheumatism might very well be defined as gout of the larger joints; while the stiffness, lameness, and rigidity of the muscles, and the thickening and swelling of the structures in and around the joints, are about as common to either manifestation of the arthritic diathesis.

Symptoms. — *Inflammatory* rheumatism presents all the essential symptoms of inflammatory fever, or synochus, with the addition of extreme soreness and tenderness over the whole surface of the body, and also acute pain in some one or more of the larger joints, or in the small of the back, rendering all motion of the body and limbs extremely difficult and painful. The patient is often unable to get on or off the bed without assistance, and then the effort is attended with great suffering. The *articular* variety has been called *rheumatic fever*, or *acute rheumatism*. It differs from the former in being attended with much less general pain and soreness, and a much greater inflammatory action and swelling of some one or more of the large joints and surrounding muscles, generally the hip, knee, elbow, or shoulder. *Lumbago* is the variety in which the pain is felt chiefly in the loins, usually shooting upward. In the form called *sciatica*, or *coxalgia*, the pain is felt mostly in the hip-joint, the disease also being attended with an emaciation of the nates or buttock of the

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affected side, or an elongation of the limb. In the variety called *muscular*, the pain is experienced mainly in the muscles of the diaphragm, or in the intercostal muscles between the ribs, when the pain is greatly increased by a full inspiration. This form has been called *pleurodyne*, *pleuralgia*, and *spurious pleurisy* by authors; and not unfrequently mistaken for real pleurisy, and the patient bled, leeched, and blistered not a little to his disadvantage. *Chronic* rheumatism is characterized by pain, rigidity, and weakness of the larger joints and surrounding muscles, accompanied with no regular fever, and but slight occasional febrile paroxysms, and with very little perceptible swelling. This form of rheumatism is almost always relieved temporarily by warmth, hot applications, stimulating liniments, etc., while all the other forms are frequently aggravated by them.

The fever attending rheumatic attacks is peculiarly accompanied with frequent and irregular sweats, which, however, do not prove in any sense critical, nor exert any marked influence upon the course of the disease.

Unusual exposures to wet and cold while the body is in a state of exhaustion or obstruction, and use of mercury or calomel, seem to be the general producing causes of all forms of rheumatic affections.

So long as the *mercurial mania* rages among the medical gentlemen of the allopathic school, so long will the reform physician be continually called upon to treat many anomalous varieties of chronic rheumatism, *made such* by the *mercury* with which the patient has been dosed in the treatment of some acute disease. Such patients are peculiarly sensitive to vicissitudes of weather, and do not bear changes as those whose systems have never been mercurialized.

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CHAPTER VI.

DYSPEPSIA — INDIGESTION.

AUTHORS have enumerated upwards of one hundred distinct diseases, having assigned specific characters: yet each is nothing but a mere circumstance of deficient or imperfect performance of the digestive function. Below are classed, —

1. Dyspepsia.	6. Colic.	11. Cholera.
2. Liver Complaint.	7. Painter's Colic.	12. Diarrhea. [tions.
3. Jaundice.	8. Wind Colic.	13. Intestinal Concre-
4. Duodenitis.	9. Surfeit.	14. Worms.
5. Misdentition.	10. Constipated Colic.	15. Hemorrhoids.

That the majority of the diseases named above are symptomatic of indigestion all will allow; but those who are accustomed to regard *worms* as natural to the alimentary canal, and those who consider the *piles* as a local affection, will object to the tabular arrangement. But I will venture to assure every physician who will carefully investigate the subject, that he will find the stomachs and bowels of children or adults infested with vermin in very nearly the ratio that foul secretions and crude ingesta evince disordered digestion; and if he will attentively study the history of hemorrhoidal affections, he will find them, in some form, almost as general as, and almost invariably preceded by, constipated bowels. Still greater will be the dissent of those who have imagined epidemic or spasmodic cholera to depend on specific contagion, ozone, electrical or magnetic states of the atmosphere, or planetary or other *unearthly* influences, to the idea that all the choleras of medical books are dyspeptic affections. But, whatever may be their predisposing or exciting causes, it is sufficiently apparent that the actual condition of the disease is that of extreme derangement and intense irritation of all the organs auxiliary to digestion.

1. **Dyspepsia.** — Depraved appetite, unnatural thirst, flatulence, acrid eructations, heartburn, or water-brash, irregular bowels, and sick headache, are among the multitudinous symptoms of dyspepsia; yet the disease may exist with the absence of either one or the majority of them.

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SYMPTOMS. — Fastidious or irregular appetite, constipation or diarrhea, or those states alternating, sense of weight or other feeling of distress after eating, food digested with difficulty, depressed spirits, disturbed sleep, occasional pain or tenderness in the epigastrium, a feeling of languor, which is relieved by taking food, aversion to exercise of body or mind, are symptoms which, variously combined, designate the disease. Usually there is occasional palpitation or throbbing of the heart, furred tongue, and slow, irregular, or intermittent pulse.

Some other authors distinguish dyspepsia into the *nervous* and *mucous* varieties. The term nervous, is applied to the disease when occurring in persons of irritable temperaments, with a large development of the brain and nervous system; and the term mucous, is applied to the disease as it appears in persons of more torpid or phlegmatic temperaments. The former generally results from mental shocks, excessive emotions, intense study, violent passions, and is attended with great pain or uneasiness in the stomach, spasms, gnawing or sinking sensations, capricious appetite, etc. The latter results more especially from sedentary habits and excesses in eating and drinking, and is attended with torpid bowels, and but little actual pain in the digestive organs.

2. **Liver Complaint.** — A morbid condition of the liver is as constant and as necessary a concomitant of indigestion as is a morbid condition of the stomach. In some forms of deranged digestion the stomach and bowels appear to be the seat of the more prominent morbid phenomena, and in others the liver presents evidences of being disproportionately affected. Its pathological conditions are various, but its functional derangements may all be comprehended under the general term of liver complaint.

SYMPTOMS. — *Chronic hepatitis* is a state of passive or chronic inflammation of the organ. In addition to a variety of dyspeptic symptoms, there is sense of weight, fullness, or other pain in the region of the liver, which is increased by deep pressure; sometimes the pain is referred to the left side; at other times to the right shoulder, or between the shoulder-blades; there is frequently darting, irregular, and fugitive pains along the breast-bone and through the chest; some degree of enlargement or hardness is usually obvious to the touch under the short ribs of the right side; the countenance is sallow; the bowels are costive; the stools are clay-colored; the patient is torpid, inactive, and desponding, and there are occasional attacks of jaundice. Dropsy frequently follows this form of diseased liver. It is also generally attended with a dry,

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husky cough, and a slight hawking, or spitting of a thick, tenacious mucus, especially in the morning, when the sputa appears dark and carbonaceous, as though charcoal-dust had been diffused through it. The cough is immediately caused by the engorged or swelled liver pressing upon the diaphragm, and the viscid secretion of the mouth or throat is owing to the irritation of congested and acrid bile. This cough and expectoration may be distinguished from that which has its seat in the lungs or their appendages, by the *slow pulse*, and the prominent hepatic or dyspeptic symptoms.

3. **Jaundice** has been commonly distinguished into the *yellow* and *black*, or *green*, according to the discoloration of the skin from impacted and partially putrescent bile, to which some authors have added the sub-varieties of *biliary* — produced by a resorption of bile; *gall-stone* — resulting from obstruction of the bile-ducts from inspissated bile; *spasmodic* — produced by spasmodic stricture of the bile-ducts; *hepatic* — resulting from scirrhus or induration of the liver; *infantile* — occurring in infants; and *black vomit* — the regurgitation of morbid bile into the stomach, and its ejection, mixed with dark, grumous blood. Jaundice, in a general sense, is known by debility, languor, inactivity, heat and pricking of the skin, bitter, nauseous, or acrid taste in the mouth, yellowness of the conjunctiva of the eye, and subsequently of the whole surface of the body; the bowels are irregular, the urine high-colored and yellowish; the pulse is usually slow and weak, the mind is downcast and gloomy, or listless, wandering, and irritable, and there is feverish heat and dryness of the skin. When the disease is protracted, the skin turns greenish, brown, livid or leaden, blotches appear in different parts, and the discharges from the bowels are dark, pitchy, and bloody. The special or immediate cause of jaundice is torpor or inactivity of the liver, by which the viscid particles, which should be secreted in the liver and passed off in the form of bile, are left in the blood.

The existence of *gall-stones* is known by the acute and sometimes excruciating pain they occasion when passing through the common bile-duct from the liver into the duodenum; this pain is felt in the epigastrium, extending to the right side and back, and occurs in severe paroxysms, with intervals of comparative ease. The pain suddenly remits when the calculus reaches the intestine.

4. **Duodenitis** is an inflammatory state of the mucous membrane of the duodenum, at the point where the bile enters this portion of the intestinal tract. It is occasioned by the contact of acrid and irritating bile, and known by a sickening, sinking, gnawing

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sensation just below the pit of the stomach, with tenderness to external pressure, often so great as to make the weight of the hand or of the bed-clothes painful.

5. **Misdentition.** — Teething, tooth-edge, toothlessness, and deformity of the teeth, are placed in the catalogue of diseases belonging to the genus before us. *Teething*, it seems, is rather a natural than a morbid process; and, although often accompanied with much pain and suffering, and various diseases, these are all owing to some obstruction or irritation in the digestive organs, producing a general feverishness of the system and an inflammatory state of the gums. *Tooth-edge* is the peculiar tingling or uneasy sensation experienced in the teeth from some kinds of grating or jarring noises, or from certain acids and acrid substances. *Toothlessness* results from constitutional defect, external violence, internal drug-medicines, decay, or old age. *Deformity of the teeth* is generally an unfortunate inheritance, for which the child is indebted to the bad dietetic or other habits, or infirmities, of one or both parents; a great degree of deformity, however, may be produced by bad habits in the dietetic and medical management of the child itself.

The diseases properly coming under the present head are, toothache, tartarous teeth, and excrescent gums, all specially connected with or dependent on depraved or impaired digestion. The history of all the animal creation, and of the whole human race, shows that there is a most intimate relation between sound, clean, symmetrical teeth and healthy, fine, vigorous gums, and correct dietetic habits. The uniformly healthy condition of the teeth of wild animals, and the general rotting state of those of domesticated animals, illustrates this fact sufficiently.

The exciting cause of *toothache* is usually "taking cold." It may exist in connection with caries or ulceration of the teeth, or with extreme irritability of the dental nerve without structural decay. These annoyances are easily avoided by careful attention to the teeth and gums, with frequent use of the brush.

6. **Colic.** — All those diseases comprised under the generic head of colic, or belly-ache, are characterized by griping pains in the bowels, mostly in the region of the umbilicus, and attended with vomiting and costiveness.

Symptoms. — The species called *iliac passion* is accompanied with painful retraction, or drawing in of the navel, and spasms of the muscles of the belly; the vomiting is exceedingly violent, ejecting bile from the duodenum, and often stercoraceous matter from

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the bowels; and even in some cases the injections introduced into the rectum have been ejected by the mouth. This is the disease called *introsusception* or *intus-susception* in medical books, and so denominated from the circumstance that one portion of the affected intestine, constringed and lessened in diameter, has fallen into another.

7. **Painter's Colic**—known also as *Devonshire Colic*—is so termed from the remote cause being the introduction of lead into the system, and hence mostly confined to painters. In the neighborhood of smelting furnaces, pigs, poultry, and other animals are said to be affected with this complaint. It is evinced by a pain at the pit of the stomach, at first dull and remitting, but gradually becoming more violent and continued, and, as it increases, extending upward to the arms, and downward to the navel, back, loins, rectum, and bladder, and frequently extending to the thighs and legs. From the navel it sometimes shoots with so much violence to each side that the patient feels as if some person were cutting him in two. The external muscles are extremely sore and tender, and can scarcely bear the slightest touch. Momentary relief is occasionally experienced after the vomiting of acrid bile and slime, but the pain soon returns. In about a week or less, if recovery takes place, relieving sweats appear, and the bowels discharge large quantities of excrement, consisting of hard lumps, or scybala, mixed with blood and dirt-colored mucus, after which the patient is convalescent. Paralysis of the fingers, hand, and arm comes on after several attacks.

It may be poor consolation to wine-bibbers to know that litharge, and other preparations of lead, are extensively employed in the manufacture of sweet and sub-acid wines, and that where such wines are freely drunk, this kind of colic is very prevalent; nevertheless, such is the fact.

8. **Wind Colic** (*colica flatulentia*) is evinced by acute pain extending to the pit of the stomach, accompanied with great fullness and flatulence, often impeding respiration. It is relieved by pressure, expulsion of wind, or bending the body forward. It is chiefly produced by crude or unripe fruits, long fasting, grief, fear, etc., and is a frequent attendant of dyspepsia and chronic diarrhea.

9. **Surfeit** is usually produced by loading the stomach with an excessive quantity or indigestible quality of food. Occasionally it results from poisonous vegetables or animals taken into the stomach. Various kinds of shell-fishes, and several species of other

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fishes, are known to have been followed by an attack. It is characterized by pain, nausea, and dizziness, until vomiting takes place, terminating afterward in a griping looseness. There is also, in some cases, an eruption of the skin, with constriction in the throat, an intolerable sense of suffocation, swollen eyes, extreme thirst, and a burning heat over the whole surface.

10. **Constipated Colic** is caused by indurated feces, or other intestinal concretions, and is known by severe griping pain, obstinate costiveness, great tension with little flatulence; the vomiting sometimes accompanied with feces; the costiveness is attended with bloody strainings, terminating, when not fatal, in a free discharge of the infarcted matter.

The *constrictive* species results from a permanent stricture existing in some part of the alimentary canal. Its symptoms are, a sense of stricture; a feeling of flatulence gradually passing off by the stricture; the bowels tardy, and discharging with difficulty small liquid stools. In the early stage of the disease there are colic pains and costiveness, alternating with bilious diarrhea; after the disease has existed some time, solid feces are rarely passed, and only after a great effort, and they are of an extremely slender caliber. Patients have been known to subsist more than thirty days without any evacuation from the bowels.

11. **Cholera.**—The group of diseases comprehended under this generic term, is characterized by vomiting and purging, gripings in the bowels, spasms in the arms and legs, often flatulent eructations and dejections, with great anxiety and prostration. The usual succession of symptoms is, vomiting, purging, spasms, prostration, and collapse. In the spasmodic cholera, however, the vomiting is generally preceded for hours or days with looseness or painless diarrhea. Cholera is distinguished from colic by the presence of purging, and from diarrhea by the absence of vomiting in the latter disease.

In the *bilious* variety (commonly known as *cholera morbus*) the vomiting and purging are copious and frequent, with a redundancy of bile. In the severest cases the vomiting is vehement, the dejections very painful, the spasms violent, and the agony intense. In the worst cases the extremities are cold, the pulse is small, frequent, and unequal, and the patient sometimes dies within twenty-four hours from the first attack. The exciting causes are usually a surfeit, acrid bile, indigestible articles of food, drastic purges, emetic drugs, especially tartar emetic, etc.

The *flatulent* form (*wind cholera*) is particularly characterized by

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the absence of bile in the discharges; the vomiting and purging are rare; but in their stead there is great and oppressive flatulence and retching, with windy eructations and dejections. This form of the disease is rather peculiar to dyspeptics.

Spasmodic cholera (called also *malignant, epidemic, Asiatic, Indian, blue,* and *pestilential cholera*) is generally epidemic, though not contagious. The first symptoms are usually experienced during the night, sometimes commencing with a slight general uneasiness and moderate diarrhea; at other times the symptoms come on violently, and follow each other rapidly. In fatal cases death usually occurs at some period between six and twenty-four hours; in a few fatal cases the patient lingers two or three days. The ordinary course of symptoms is, more or less diarrhea; the discharges at first feculent, but soon presenting the appearance of rice-water or gruel; there are flying pains, or sense of coldness in the abdomen, as if purgative medicine were about to operate; the countenance is pale; there is nausea, vomiting, prostration of muscular power, and nervous agitation; cramps in the legs, arms, loins, and abdominal muscles, more or less severe; small weak pulse, intense thirst, and urgent desire for cold water; in most cases cold, clammy skin; all these symptoms may appear successively or almost simultaneously. In some cases the premonitory symptoms exist for eight or ten days; and sometimes the patient is prostrated at once. When the disease comes on suddenly, the cramps usually commence in the fingers and toes, rapidly extending to the trunk; the eyes are sunken, and surrounded by a dark circle; there is vomiting and purging of white matters mixed with flocculi; the features are sharp and contracted; the expression of countenance wild and confused. The face, extremities, and often the whole surface of the body, manifest a varying intensity of a leaden, bluish, or purplish hue; the extremities are shrunk, the nails blue, the pulse thready or wholly imperceptible at the wrist, arm, axilla, temple, or neck; there is great restlessness, incessant jactitation, severe pain in the epigastrium, loud moaning or groaning, difficult and oppressed breathing; difficult inspiration, with short and convulsive expiration; the voice hoarse, whispering, or nearly suppressed and plaintive; the tongue is white, cold, and flabby, and the external temperature often sinks below 80°; convulsions recur at short intervals, or a constant tremor exists. The secretions of bile, saliva, tears, and urine are entirely suppressed, and a cadaverous odor exhales from the body. The patient retains his faculties to the last.

Either of the above symptoms may be disproportionately severe,

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or it may be entirely absent. Those usually regarded as pathognomonic are, watery dejections, blue appearance of the countenance or surface, thirst, coldness of the tongue, and pulselessness at the wrist.

The fourth variety (*cholera infantum*) is peculiar to infants, and prevails extensively during the warm season in nearly all of our cities. In ordinary cases the diarrhea precedes the vomiting for several days; but in severe ones vomiting also occurs from the beginning. The discharges at first are composed of ordinary fecal matters; but, as the disease progresses, they become watery and variously colored, from a dirty white to a brownish, and sometimes greenish hue. Sometimes these discharges are frothy, like yeast, and mixed with the food, which passes the bowels almost unaltered; in some cases the discharges are bloody, as in dysentery. There is raging thirst, the tongue is dry, but scarcely furred; the febrile heat is very irregular; the body emaciated; the skin grows dry and ash-colored; the abdomen is very much heated toward the termination of the disease; the pulse is small, weak, and frequent throughout. It usually runs its course in about three weeks.

12. **Diarrhea.** — The group of diseases properly arranged under this head are characterized by frequent and copious discharges by stool, with a sense of weight and uneasiness in the lower belly, and without severe griping or tenesmus; nausea and vomiting are occasional, but not usual incidents. All forms of diarrhea may become chronic, in which event there is great emaciation.

Feculent Variety. — The feces are of common quality, but simply loose and copious.

Bilious Variety is only distinguished from the former by the bright yellow color of the discharges.

Mucous Form. — The dejections consist mainly of, or contain a large quantity of mucus. Sometimes called *catarrhal diarrhea.*

White Looseness is characterized by dejections of a milky color, resembling a mixture of water and lime, with a frothy scum. It is chiefly found in persons whose digestive powers have been shattered by severe fevers and severer drugs, and by excessive indulgence in stimulating food or drink, or narcotic irritants, as alcohol and tobacco.

In the fourth variety, called Lientery, the dejections consist principally of undigested aliment, which passes rapidly through the alimentary canal, with but little change.

In the Serous Variety the discharges are almost entirely limpid and watery.

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TUBULAR DIARRHEA is known by discharges consisting more or less of membrane-like tubes, or fragments of membranous tubes, which are whitish, viscous, and inodorous. This membranous secretion is of the same nature as that which takes place in the mucous surface of the trachea in cases of croup. Its expulsion from the bowels often alarms the patient, who mistakes it for a portion of the bowel itself. In some instances, membranous tubes half a yard in length have been evacuated.

13. **Intestinal Concretions.** — There are three kinds of stony concretions found in the stomach or intestinal canal, all of which are the result of indigestion connected with constipation. One kind, called BEZOAR, or BEZOARDUS, is frequently found in the stomachs of ruminating animals, especially the goat, but very rarely in the human stomach. It consists of a central nucleus of gravel, straw, glass, seeds of plants, etc., around which a vegetable matter or animal secretion is closely agglutinated, having a glossy white or a bright metallic luster. These concretions were formerly regarded as febrifuge by physicians, and worn as amulets by the superstitious.

Another kind, INTESTINAL CALCULUS, more frequently found in the human stomach, is composed of the same earthy and sandy matters as are found in the bladder in calculous affections of that viscus, and are of various sizes, from a pea to a hen's egg. The long-continued use of chalk, magnesia, etc., so generally prescribed for acidity of the stomach, is a frequent cause of these concretions; hence dyspeptics are peculiarly liable to them. Preparations of iron, particularly the carbonate, when administered medicinally, have been known to accumulate in the bowels and form concretions.

The third kind, SCYBALUM, consisting of indurated mucus or oily matter mixed with hardened feces, results from constipation, by which the excrementitious matter remains too long in the cells of the colon, or some other part of the alimentary track. The discharges are usually in the form of hard, roundish balls, from the size of a pea to that of a walnut. The substance called *ambergris*, found in the larger intestines of the cachalot, or spermaceti whale, is supposed to consist of the hardened feces of the whale, and to be the result of constipation; hence the more sickly the animal when harpooned, the more productive and valuable is its yield of ambergris.

It is generally difficult to recognize these affections. Usually, however, there is more or less pain or uneasiness at a particular point in the abdomen, and occasionally a hard, lumpy tumor, which

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either produces an external uneasiness or swelling, or may be distinctly felt on pressure by the fingers.

14. **Worms.** — Pathologists are not all yet agreed whether invermination — worms, or the larvæ of insects inhabiting the stomach or intestines — is natural or abnormal. It is not very long since a kind of worm mania prevailed in the medical profession, by which a multitude of diseases were ascribed to vermination. Dysentery, plague, measles, small-pox, hydrophobia, itch, syphilis, piles, cholera, and even toothache, have been imputed to various kinds of animalcules, vermin, or insects.

There is no manner of doubt that worms are suspected, by physicians and nurses, to occasion various ailments of children much oftener than they really exist; but it is equally true that they do occasionally effect a lodgment, and become developed in the alimentary canal, producing a variety of symptoms indicative of gastric and intestinal irritation. Their origin is not so clear. In some instances it is quite obvious that the young or ova of some species of worms is taken into the stomach with the ingesta; generally when drinking of stagnant or marshy waters, or when eating decayed or infected fruits and vegetables, or partially decomposed and putrescent animal food. It is also highly probable, at least, that the minute eggs, or ovulu, of various animalcules floating in the atmosphere, and collecting, especially in damp places, on the alimentary materials, get an entrance into the digestive cavity, and, providing they find in foul secretions, retained excrementitious matters, or impurities of any kind, a proper nest, quicken into life, grow, and become finally so strong and vigorous as to resist the ordinary solvent property of the vital fluids, and the expulsive efforts of the unaided *vis medicatrix naturæ*. This idea makes the existence of worms depend on a morbid condition, which I believe to be the fact; for I have never yet known any kind of vermin to trouble children who have been fed and reared healthfully. Dr. Cooper and many other medical writers of credit assert that worms are most prevalent among the poor, dirty, ill-fed classes of society, and particularly in persons who reside in damp, marshy countries.

Alvine Worms are those which exist and find a proper nidus in the stomach or alvine canal; they are mostly found in children and sickly adults, producing emaciation, a swelled, hard belly, gnawing or pungent pain in the stomach, pale countenance, fetid breath, and irritation of the nostrils. These worms have been arranged into five varieties, viz., the *long round-worm*, *long thread-worm*, *long tape-worm*, *broad tape-worm*, and *fluke*. The first and second

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varieties are much more common than the others. The latter is rarely found in man, though the most common to domestic animals.

Anal Worms exist in or near the rectum or lower bowel. They excite a troublesome itching or irritation of the part, often preventing sleep, and sometimes occasioning pain or faintness in the stomach. The varieties found in this locality are the *ascarides*, called also *thread-worm*, and *maw-worm*, the *beetle-grubs*, and the *bots*. The first variety is most common, and is somewhat migratory, being occasionally found in the stomach and bladder. The last two kinds are very rare in the human animal.

The Erratic Worms, which are occasionally though not frequently found in the alimentary canal, are the *hair-worm*, the *erratic leech*, and the *maggot*. These are called erratic, because they do not find a proper habitation in the stomach or intestines; they produce spasmodic colic, with severe gripings; and sometimes vomiting, or dejection of blood. The first and second varieties are chiefly found where the stagnant, muddy, and putrid waters of marshes, pools, and ditches is drank. They sometimes, when accidentally introduced into the human stomach, attain an enormous size, and deviate so much from their ordinary shape as to be with difficulty recognized. Dr. Good says, "It is highly probable, however, that they can only live in dyspeptic patients, or persons whose digestive powers are infirm; for there are few or no animals capable of resisting the solvent power of the gastric juice when secreted in full health and vigor." The third variety find their way into the stomach in the condition of eggs or *hoppers*, which are deposited in various articles of food, particularly in all strong and stale meats, cheese, bacon, etc.

Symptoms. — "Headache, vertigo, torpor, disturbed dreams, sleep broken off by fright, screaming fits, convulsions, feverishness, thirst, pallid hue, bad taste in the mouth, offensive breath, cough, difficult breathing, itching of the nostrils, pains in the stomach, nausea, squeamishness, voracity, leanness, tenesmus, itchings at the anus toward night, at length dejection of films and mucus. The broad tape-worms produce the severest mischiefs on the body; the teretes and ascarides (round and thread-worms) sometimes lurk scarcely suspected, unless there is itching of the anus, or they are traced in the feces." All of these symptoms, however, *may* arise from any continued irritation in the first passages; hence, in forming our diagnosis, we must take the greater number of the above symptoms in connection with the *absence* of any other recognizable malady to

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which they can reasonably be attributed. "In all obscure diseases," says Swediaur, "attended with symptoms that are chiefly anomalous, the suspicions of the physician should be directed to intestinal worms."

15. **Hemorrhoids.** — The varieties of diseases comprehended under this generic term are "livid and painful tubercles or excrescences on the verge of the anus, usually with a discharge of mucus or blood." This definition excludes those swellings of the veins near the anus and within the rectum, which are termed *hemorrhoidal varices*, and which almost all persons who are habitually costive are more or less troubled with, evinced by pain and difficulty in passing the feces, which are slightly streaked with blood. Dr. Rush, and, indeed, nearly all medical authors, regard the various forms as originally mere swellings of the veins.

Description. — In their simplest state piles consist of varicose tumors of the anal veins, covered with a slight thickening of the mucous membrane of the rectum. They are first noticed in the form of small fleshy tubercles, generally of a brownish or pale red color, and either situated within the anus, or descending from the rectum. They have rather a solid and spongy feel, and when quite external are pale, and more elastic and transparent. They frequently appear and disappear very rapidly. Piles often contain a central cavity, filled with fluid or coagulated blood; and by repeated attacks of inflammation the swellings gradually enlarge into caruncular excrescences about the verge of the anus, either within or without, of various shapes and forms, from pea-sized to fig-sized, and are frequently so painful as to prevent either sitting or walking. When these caruncles are hard, florid, incompressible, without discharge, and intolerably sore to the touch, the affection is called *blind piles*. When the irritation accompanying them induces a discharge of whitish mucus from the neighboring glands, it is called *white piles*. When the hemorrhoidal vessels, which form or support the growing tumors, are so distended as to burst and bleed freely, it is denominated *bleeding piles*. And when warty excrescences spread about the perineum, or within the verge of the anus, it is called *caruncular piles*. Usually pile tumors become larger and firmer with every reappearance; and when they have been strangulated for some time by the pressure of the sphincter, repeatedly gorged with fluids, or of very long standing, they become fixed and permanent in size, and acquire a greater degree of solidity; they are then a source of almost constant pain and trouble from protru-

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sion, inflammation, or ulceration, and often occasion a most distressing prolapsus of the lower bowel.

Probably more than half the adult population of the United States are sufferers, to a greater or less extent, from piles in some form. For years past, during which time my attention has been especially called to this subject, I have found a great majority of invalids who have applied for treatment, whatever might have been the character of their leading malady, to be also afflicted with this.

CHAPTER VII.

ACUTE AND CHRONIC FLUXES.

The only species strictly pertaining to this genus are catarrh and dysentery, both essentially febrile diseases, and each consisting of a peculiar inflammation of some portion of the general mucous membrane. Each exhibits two varieties, thus:

1. Catarrh, { Common. / Epidemic. } 2. Dysentery, { Acute. / Chronic. }

1. **Catarrh.** — This is an inflammatory affection of the mucous membrane of the fauces, often extending to the frontal sinuses or bronchia, or both. It is attended with sneezing, obstruction of the nostril, and more or less mucous expectoration, or discharge from the nose.

Symptoms. — In *common catarrh* (*cold in the head or chest*) the fever is slight; there is a sense of weight over the eyes, and fullness in the head, and the nostrils pour forth a thick, acrimonious ichor, which excoriates the skin; the voice is hoarse, and more or less cough attends. In the *epidemic* form (*influenza*) the attack is sudden, and the fever severe and strikingly depressive; there is great heaviness over the eyes, extreme languor, anxiety, and oppression at the præcordia, with frequent sighing, sickness, and violent headache. The pulse is very frequent, and peculiarly irregular; the skin is moist, with a tendency to profuse sweating, but the heat of the body is seldom considerable; the tongue is white and yellowish, but moist; sometimes there are severe general or local muscular pains, and at other times erysipelatous patches appear in different parts of the body. The danger of this disease is not in proportion to the violence of the symptoms, as compared with all

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other febrile diseases, for usually the symptoms are extremely violent for one or two days, and then as rapidly subside; great debility, however, frequently exists for weeks or months after convalescence is established. Often severe pains attack the chest, and in such cases physicians, regarding them as indicative of pleurisy, have endangered the patient's life by venesection.

2. **Dysentery.** — This disease was called *bloody flux* by the old authors. It is an inflammatory affection of the mucous coat of the larger intestines, accompanied with griping and tenesmus; the dejections are frequent and bloody, and the feces are discharged irregularly.

Symptoms. — In the *acute* variety, the abdomen is painful or tender; the feces are discharged with difficulty; mucous and bloody dejections alternate, or are variously diversified in color and consistence; the attending febrile disturbance is considerable, and may be of the *high* or *low* character — the synochus or typhoid type.

What is called *chronic dysentery* is sometimes a milder and more disguised form of the disease, but more generally it is common diarrhea modified by local circumstances, or a sequel of maltreated acute dysentery. In plainer English, it is frequently a drug-disease. This remark need not excite surprise when the formidable array of drug-poisons which modern medical science has brought to bear upon this disease, and upon the patients' constitutions too, — calomel, corrosive sublimate, sugar of lead, antimony, nitrate of silver, opium, capsicum, oil of turpentine, mineral acids, etc., — is taken into account. Chronic dysentery is attended with but slight fever, and that usually of the hectic type. Either variety may be attended with ulceration of the bowels, and purulent, sanious, or membranous evacuations, or discharges of pure, unmixed blood. Undue exposure to cold, damp, sudden alternations of temperature, etc., are the chief exciting causes. Bad water and marsh effluvia sometimes occasion the worst forms of the disease.

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CHAPTER VIII.

HABITS — CACHEXIES.

The latter term signifies "bad habit of the body," and existing more or less in all diseases. This chapter is an important one, and includes, under this head, —

1. Consumption.
2. Marasmus.
3. Elephantiasis.
4. Hemorrhage.
5. Scurvy.
6. Plethora.
7. Scrofula.
8. Cancer.
9. Melanosis.
10. Catacausis.

1. **Consumption** (Pulmonary Consumption). — Consumption of the lungs is the most general evidence, and the most fatal result, of the artificial and enervating habits of civilized society. In the city of New York, about two thousand die annually of this disease, and in Boston, Philadelphia, Baltimore, and a majority of the other cities of the United States, the mortality from this source bears nearly the same relation to the population. In most other countries in which civilization has made equal progress, the disease has committed equal ravages. Dr. Bond has calculated that it destroys, prematurely, one fourth of the inhabitants of Europe. Females, from their more sedentary, in-door, and relaxing habits, are rather more liable to this malady than males. The period of life between puberty and middle age — fourteen to forty — is more especially favorable to the operation of the causes of this disease, and the greatest ratio of mortality occurs between the ages of thirty and forty. The greatest number of deaths in this latitude, takes place in the coldest months of the year. This fact, however, does not prove that the cold season is more conducive to the development or causation of consumption, but that consumptives are more liable to sink at that particular period.

Symptoms. — *Tubercular Consumption* is by far the most frequent and most intractable form; and, indeed, some authors regard the existence of tubercles in the lungs as essential to the character of true phthisis. It is usually connected with a strongly-marked scrofulous diathesis, is more insidious in its approach, and more delusive in its progress than either of the other varieties. Many persons are

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born with such a malformation of the chest, and so great a predisposition to tubercles, that the slightest aberrations in the manner of life suffice to induce that condition of engorgement, mal-assimilation, and morbid deposition which eventuates in general tuberculation of the pulmonary structures. The special symptoms are, short and tickling cough; the pain in the chest is slight; there is either a sense of tenderness or weight experienced at the upper part of the lungs; the breathing is habitually short, and a full inspiration is impracticable, the attempt increasing the sense of weight, soreness, or aggravating the cough; the expectoration is generally scanty and small in quantity in the early stages, and in many cases it is very trifling throughout; the matter expectorated is a watery, whey-like sanies, sometimes tinged with blood, and as the disease progresses, thick, tenacious, curdy, or cheesy particles are excreted. Sometimes small, irregular, stony concretions are formed by the deposition of earthy matters — mainly carbonate of lime — in the substance of the tubercles, and expectorated as the process of ulceration releases them from their enclosures. Emaciation does not become strikingly apparent until the disease has made severe inroads upon the constitution, and not unfrequently the body maintains its ordinary fullness until the greater portion of the lungs is fatally occupied by tubercular formations. In those cases attended with but trifling expectoration, there is, of course, but little ulceration; yet, generally, some portions of the tubercles are ulcerating, and forming open, irregular cavities in the substance of the lungs, while in other parts of the pulmonary structures, the process of tuberculation is going on. As the functional powers of the lungs become impaired, the pulse becomes frequent and feeble, the breathing grows shorter, irregular chills come on, succeeded by some degree of feverish heat; and, in the last stages, night sweats, diarrhea, swellings of the limbs, etc., denote the rapidly approaching fatal termination. In this form of consumption, the hope of recovery often attends the patient almost to the dying hour, and schemes of business or pleasure, or new projects for recovery, occupy his thoughts until within a few days or hours of death.

There has been much controversy among medical theorists whether tubercles are the product of inflammatory action, or of irritative action, or of an action to which some other technical term should be applied. The discussion is entirely unprofitable. It is enough to know that the general condition of the body is one of debility; that the local condition of the part diseased is one of engorgement, and its secretions changed from a healthy to a morbid

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character. It is also a disputed point whether tubercles in the lungs are curable in any case, some eminent authors taking the position of their absolute and unconditional fatality, while others, equally respectable as practitioners and pathologists, contend that cures have resulted in a few instances.

Dr. Good, in allusion to a remark of Dr. Woolcombe, that fifty-five thousand victims annually die of consumption in Great Britain, makes the following very singular observation: "During the last half-century, it is said to have been considerably on the increase; but this is perhaps chiefly owing to the greater number of infants of delicate health who are saved from an early grave by the introduction of a better system of nursing than was formerly practiced, yet who only escape from a disease of infant life to fall before one of adolescence or adult years. And, for the same reason, savages rarely suffer from consumption, as they only rear a healthy race, and lose the sickly soon after birth." A better explanation can be found in another way. Much of the increasing mortality is justly attributable, in my opinion, to the introduction of a *worse* system of nursing infants than formerly prevailed, to wit, close rooms, hot slops, tight clothing, nicknack food, apothecary drugs, etc., by which the bodies of the infants become sickly, stunted, feeble, and susceptible before they emerge from their cradles. The reason that the savages seldom have consumption is because they are comparatively exempt from the peculiar debilitating customs of our "better system." The statement that they lose all their sickly children, is wholly gratuitous.

In the *catarrhal* form the cough is frequent and violent, with a copious expectoration of a thin, muco-purulent matter, rather mixed with blood, but generally offensive to the smell. There is considerable soreness of the chest, and transient pains shifting from side to side. It comes on after repeated colds, or a protracted catarrhal affection.

The *apostematous* variety is known by a dry cough, which returns fitfully; fixed, circumscribed, obtuse pain in the chest, which is sometimes throbbing or pulsatory; the patient experiences great difficulty in lying on one side. The cough at length terminates in a sudden and copious expectoration of purulent matter, which sometimes threatens suffocation. These symptoms are immediately owing to the formation of an aposteme or abscess in the lungs. When the collection of matter is considerable, the patient often experiences severe rigors or chills, and manifests a high degree of irritative fever. After the discharge of the matter, the patient is

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sometimes permanently relieved; but usually the relief is temporary, and all the symptoms recur repeatedly, at longer or shorter intervals, as new abscesses form and discharge their contents. In some few instances no expectoration takes place, the patient dying before the abscess breaks.

Laryngeal phthisis is that modification of the disease in which ulceration commences in the larynx before any extensive morbid alterations have occurred in the lungs. It is distinguished by excessive irritation and tickling in the larynx, with a cough dry and husky at first, but soon attended with a slight discharge of purulent mucus, frequently streaked with blood; there is also remarkable hoarseness, which occasionally goes and returns without any assignable cause, and a sense of soreness or tenderness about the upper part of the throat; often there is some degree of actual hemorrhage from the diseased part.

All these symptoms may occur in the last stage, or near the fatal termination of either of the other forms of consumption, more especially the tubercular; and also in the worst cases of bronchitis; they can, therefore, only be properly regarded as a distinct variety of phthisis when they take the lead in the morbid manifestations. When the ulceration of the larynx, instead of preceding disorganization in the lungs, comes on after ulceration in the lungs has long existed, the patient complains more particularly of a sore, oppressive sensation in the throat, as if some foreign mass were lodged in the larynx; and this sensation is generally accompanied by more or less difficulty of swallowing; it is, too, usually accompanied with a peculiar hoarseness, or rather roughness, in the voice. In most cases it is a fatal omen, occurring only a few days, or at most a few weeks, before death.

The *hemorrhagic* variety is characterized by repeated attacks of hemoptysis, or bleeding at the lungs. The coughing or expectoration of a large quantity of blood, may indeed be, and usually is, an accidental occurrence in all the other forms of the disease, especially the tubercular and the dyspeptic varieties; nevertheless, it sometimes takes place without evidences of any considerable organic change either in the lungs or digestive organs, and recurs with such frequency and violence as to exhaust the patient, producing all the train of constitutional symptoms which marks the progress of the other varieties of consumption. It is intimately connected with the next variety — dyspeptic phthisis — and usually depends immediately on an excessively engorged condition and relaxation of the pulmonary vessels, this condition being chiefly

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owing to a shriveled, bloodless state of the superficial capillaries, or to an enlarged liver, or, which is more common still, to both of these circumstances combined.

Dyspeptic phthisis is that form of pulmonary consumption which is preceded by protracted disease of the digestive organs; the lungs are affected sympathetically, or, rather, the morbid condition is extended from the abdominal viscera to the lungs; the liver being usually the organ most concerned in the primary malady. This variety of consumption is more common than is generally supposed, constituting, in fact, a majority of the cases we meet with. It is seldom correctly diagnosticated, from the fact that, when the lungs become prominently the seat of the morbid phenomena, the prior evidences of digestive derangement, or disease of the liver, are overlooked; very often the latter are so obscure as to be wholly disregarded, unless the physician discovers their relation to the affected lungs by a careful investigation of the history of the patient, from the first appearance of ill health. Dr. Wilson says that drunkards, whose digestive powers have been broken down by ardent spirits, frequently fall a sacrifice to this disease; and he regards those who have suffered severe attacks of dyspepsia, and what are called bilious complaints, as peculiarly liable to dyspeptic consumption.

It is impossible to give a list of symptoms which may be relied upon as pathognomonic. Whenever the patient experiences habitual cough, be it ever so slight, and habitual expectoration, of whatever character, with shortness of breath, a sense of pain, fullness, weight, or uneasiness in the chest, with an increasing feeling of general languor or debility, the case is *probably* consumption, and should thenceforth receive the closest scrutiny. If these symptoms have been preceded by dyspeptic indications, or evidences of disordered or torpid liver, the danger is greater; and if the constitution is manifestly scrofulous, still greater apprehension may be entertained. In the early stage of the dyspeptic variety, the cough and expectoration occur chiefly in the morning, and are hardly noticed during the remainder of the day; the expectoration consists of a small quantity of tenacious mucus, or muco-purulent matter, generally discolored in the morning by a carbonaceous, dark-colored stain, as though charcoal dust had been diffused through it.

The early symptoms in all forms of consumption are obscure and insidious; and those which attend its progress and mark its several stages are subject to very great diversity. But the general progress of the symptoms may be enumerated as follows: The patient first

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becomes sensible of unusual languor, and breathes with less than usual freedom; his respirations are shorter in duration and more frequent in number. He coughs occasionally, but does not complain of its being troublesome, and he very rarely expectorates when coughing. Some degree of pain, soreness, weight, or uneasiness, will be at this time experienced in some part of the chest whenever the patient makes a deep and prolonged inspiration. As these symptoms increase, the pulse becomes more frequent and weaker, particularly in the after part of the day. After the disease has made a little further progress, there is a feverish feeling or hectic flush toward evening, a tendency to undue perspiration during the night, and either the sleep is disturbed by fits of coughing during the night, or a considerable paroxysm of coughing takes place early in the morning, leaving the patient with a greater feeling of feebleness and relaxation. This assemblage of symptoms may be considered as constituting the first stage.

In what may be regarded as the second stage, in which the disease is evidently established and generally hopeless, the cough increases in frequency, and, from being dry, is accompanied with a purulent mucus, varying from a watery, whey-like matter occasionally tinged with blood, to an expectoration of genuine pus, which may be variously colored, — livid, deep black, light brown, light green, bright or dark yellow, hard and lumpy, or soft and shredy, flattened or round, fetid or odorless. In many cases of the tubercular form it is very scanty, while in a majority of the catarrhal it is extremely copious. The uneasiness in the chest is now felt more constantly, and the sense of weight has become permanent; hectic fever is fully developed, and the breathing is often accompanied by a sound somewhat like the ticking of a watch. The strength fails rapidly, the body emaciates, the pulse beats more frequently and feebly, generally ranging from one hundred to one hundred and thirty; yet in some instances of the dyspeptic variety I have known the pulse to preserve the slow, languid motion characteristic of that form of digestive derangement in which torpor of the liver is a prominent condition, until the last. The teeth usually increase in transparency, and the eye manifests an unnatural brilliancy, the sclerotic coat becoming of a pearly white. The fingers are shrunk, except at the joints, which become prominent; the nails are bent for want of support; the nose is sharp; the eyes sunken; the countenance wears a peculiar but mortal smile; the whole body is shrivcled; the spine projects, instead of sinking, from the decay of the muscles; and the shoulder-blades stand out like the wings of birds.

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The third stage is attended with diarrhea, aphthous or ulcerated throat, difficulty of swallowing, dropsical swellings in different parts of the body, and various other symptoms indicative of the final exhaustion of the powers of life.

Although extreme emaciation usually occurs before death, yet in a few cases, particularly in the apostematous variety — which is the form most frequently designated as the *quick* or *galloping* consumption — the progress of the local inflammation is so rapid, that the extensive disorganization of the pulmonary structure produces a fatal result before the body is greatly attenuated. In a few instances recoveries have happened after extensive vomica, or abscesses, have been formed in the substance of the lungs; and a few examples are recorded in which the patient has survived the entire destruction of one lung.

Much attention has, of late years, been bestowed upon *percussion* and *auscultation* as means for ascertaining the exact morbid conditions or structural derangements of the thoracic viscera, and the *stethoscope*, invented by Laennec, has come into very general use, as a convenient acoustic instrument for the purpose of determining, with greater precision, the abnormal changes which take place in the lungs. There is no doubt that, by much experience, the practitioner can, in many cases, decide with much greater accuracy as to the exact point of the lungs most diseased, and possibly as to the extent in which the disease has involved the lungs in disorganization, with the aid afforded by a careful stethoscopic examination; yet, on the whole, I regard the instrument as of very little practical value. So far as the prospect of cure and the proper course of medication are concerned, the intelligent physician can derive no advantage from the stethoscope; and even experienced practitioners are about as liable to diagnosticate erroneously with as without its assistance. I know many persons whose lungs were pronounced incurably tuberculated by experienced professors of stethoscopy, who are now in the enjoyment of excellent health.

Consumption has been regarded as contagious by some. There is no question that all diseases have a tendency to propagate their kind, — like *causes* like, — yet this disease is not more chargeable with "personal communicability" than a majority of others. It may, indeed — and I have known such instances — be *acquired* by a vigorous, healthy person, who has no hereditary predisposition, by a long and intimate intercourse with, or attendance upon, a patient who has declined under it; as, for example, a husband or wife, devoting himself or herself assiduously to the care of a bosom com-

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panion through all the stages of the malady, occupying the same room, sleeping in the same bed, and personally performing all the acts of kindness and duty required by the patient's condition, may in time become similarly affected. It has been remarked by most authors that any suddenly suppressed evacuation or accustomed discharge, is peculiarly liable, especially when a predisposition exists, to induce consumption. I think, however, all the danger from this source could be obviated by a proper attention to the general health. A suppression of the menstrual secretion in females is supposed peculiarly to conduce to the formation of a consumptive diathesis; but more generally the suppression follows as a consequence of prior disease of the lungs. Pregnancy often arrests the progress of the disease, even when far advanced: but it recurs in all its force soon after the function of gestation is completed.

This topic can not be concluded without a paragraph of animadversion upon the popular allopathic method of doctoring consumptives. I have known so many scores of persons *killed outright*, so many cases of incipient converted into confirmed consumption, and so many confirmed consumptives hurried out of the world, by drug-medication, that I cannot speak or write on the subject, except with language of earnest denunciation against the senseless and murderous practice of reducing and poisoning the systems of those unfortunate invalids, whose vital powers are wasting fast enough without being aided by "medical science." The ordinary treatment may be resolved, substantially, into opium, bleeding, antimony, blisters, and expectorants. Each article and each process, I affirm, is individually injurious, and all are collectively pernicious. The opium lessens the effort at coughing, by which the lungs endeavor to free themselves of a morbid secretion, but aggravates the actual diseased condition of the lungs. The bleeding lessens the patient's sensibility — feeling — for a brief period, and renders him less conscious of his disease: but it is at the expense of his vitality. The antimony lessens the febrile excitement, and diminishes the force of the circulation by deadening the nervous influence, and destroying the ability of the muscular fibres to act at all. The blisters abate the pain and soreness in the lungs by paralyzing the natural sensibility, or overwhelming the lesser with a greater pain; but they render the intercostal muscles sore and sensitive, make a free expansion of the lungs more painful and more difficult, and thus tend to fasten the disease irrecoverably upon the system. Expectorants, which are given to facilitate the excretion from the bronchial ramifications, make the patient raise easy by increasing the quantity to

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be raised; and as the secretion of mucus, or pus, is already morbid and in excess, there can be no possible ultimate advantage in increasing it. I know very well the theories — and they are quite "too numerous to mention" — upon which such practice is advocated and defended; but they are as absurd and irrational as the practice is unsuccessful and death-dealing. Of the lengthy catalogue of specifics which have had and still have a reputation in the medical world for curing consumption, — digitalis, cod-liver oil, etc., — I need not speak. If the fact that all the patients who are *cured* by them soon go to their graves, is not a sufficient commentary, and if the forty or fifty deaths in the city of New York, returned weekly to the inspector's office by the physicians, under the head of Consumption, do not sufficiently attest the fallacy and falsity of the popular theory and practice, as far as this malady is concerned, no explanation that I could offer would be of any avail.

2. **Marasmus.** — A morbid condition, of which general emaciation of the body, with debility, without local inflammation or other disproportionate affection of any particular organ or viscus, has long been recognized by physicians under the generic term, *marasmus*. Leanness is not necessarily a disease; for many persons who are peculiarly lean are peculiarly healthy. It is only when increasing debility accompanies gradual emaciation that the extenuation of the system is to be regarded as abnormal. The proximate condition upon which all the varieties of marasmus depends, is bloodlessness. The manufacture and supply of nutrient material is not equal to the waste, and this implies a primary fault in the digestive or assimilating functions, or obstruction in the capillaries.

Symptoms. — In the first variety — *atrophy* — the complexion is pale, often squalid; skin dry and wrinkled; muscles shrunk and inelastic; the appetite is feeble or capricious; there is little or no fever. With infants or young children the above symptoms are preceded by flaccidity of the flesh, bloated prominence of the abdomen, irregularity of the bowels, and pendulousness of the lower limbs. To these symptoms succeed drowsiness and languor, chilliness in the morning, flushed cheeks, restlessness, and general feverishness toward evening; the urine is scanty, the feces dark, green, or pitchy, and highly offensive; the skin is hot, dry, and extremely irritable, and the child is constantly picking the nose, lips, corners of the eyes, fingers, and anus. This form of marasmus has been variously termed, in medical books, *infantile remittent fever, gastric remittent, infantile hectic, worm fever, mesenteric fever, stomach fever, low fever of children*, etc.

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In the second variety —*anhæmia, anæmia, exsanguinity* — the whole surface, and particularly the face and lips, are ghastly pale; pulse frequent and feeble; dejections from the bowels irregular, black, and fetid; appetite greatly impaired; emaciation and debility extreme.

The third variety — *climacteric* — has been called, very incorrectly, *decay of nature*. The term adopted is derived from the Greek physiologists, who divided the period of life into five epochs or climaxes, at each of which they supposed the body was peculiarly liable to some remarkable and sudden alteration for better or worse. It is characterized by general decline of bulk and strength, with occasional renovation, subsequent to the middle period of life, without any manifest local disease.

The fourth variety — *tabes* — has been known by the simple appellation, *decline;* it is distinguished from atrophy by the presence of hectic fever. It appears at any age of life, and is also characterized by the accompaniment of depressed spirits. It is the consequence of some lurking poison in the system, generally of a scrofulous or syphilitic character, or of excess or intemperance in the exercise of the animal propensities, or indulgence of the passions. When occurring from undue indulgence in libidinous pleasures, it has been called *tabes dorsalis*, from the great weakness which is experienced in the back and loins. The habit of self-pollution often induces this malady in boys and girls, and sometimes even before the age of puberty.

Causes. — Scarcity of food; improper aliment, as baker's sweet-cake, and distillery milk; profuse evacuations; scrofulous, scorbutic, or syphilitic taint; mineral drugs, as mercury, antimony, niter, and potash; acrid narcotics and debilitating sedatives, as opium, alcohol, tobacco, digitalis, iodine, hydriodate of potassa; antiphlogistic medicines, as salts, vinegar, colchicum; irritant drugs, as aloes, preparations of iron, nitrate of silver, arsenic; cold, damp, and impure air, etc.

3. **Elephantiasis.** — This affection, called in English, *elephant skin*, consists of a thick, livid, rugose, tuberculated, and insensible state of the skin. It is attended with great debility, and a variety of morbid symptoms, the sum total of which evince a general depravation of all the fluids of the body. Among the most prominent of these are remarked, highly offensive perspiration, and fierce, staring eyes.

The first variety — *Arabian* — is hereditary in Arabia and India, and is, in those countries, regarded as contagious. It is also known

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in the high northern latitudes of Norway, and is very prevalent in Iceland. The tubercles are chiefly confined to the face and joints; the voice is hoarse and nasal; the hair, except on the head, falls off; the nose is swelled and scabrous; the lips tumid; the nostrils preternaturally dilated; the lobes of the ears are enlarged and thickened, and beset with tubercles; the external sensibility is so obtunded that pinching or puncturing the skin occasions no pain. At length the tubercles crack and ulcerate; ulcerations also appear in the throat and nostrils; the breath becomes intolerably fetid; the nose falls off; the palate is destroyed; the fingers and toes become gangrenous, and drop off one after another.

The *Italian* variety is found chiefly among the Milanese and Venetian peasantry, who live in wretched hovels, breathe foul air, and eat gross and unwholesome food. The disease comes on with languor, listlessness, gloom, weakness and stupor in the lower extremities, vertigo, mental confusion, etc.

4. **Hemorrhage.** — Occasional or accidental hemorrhages occur in a great variety of diseases, not connected with any general taint or depravation of the organism. But it is only when bleeding results from an impaired or partially putrescent quality of the blood itself, or from a debility and relaxation of the coats of its containing vessels, or from both of these conditions together, constituting the hemorrhage diathesis, that the affection properly pertains to the genus before us. A flow of blood from the nose, lungs, stomach, bladder, uterus, or anus, may result from local congestion or incidental plethora, and either of these conditions may depend on temporary or occasional causes; the group of diseases, therefore, included in the present genus, comprises only the *atonic* hemorrhages of authors. When the hemorrhagic diathesis has become established, nose-bleeding is most common during the periods of youth and of senescence; bleeding from the lungs occurs most frequently between the ages of fifteen and thirty-five; and in more advanced life the tendency is to more frequent hemorrhages from the abdominal and pelvic organs.

In the first variety, — *epistaxis — nose-bleeding*, — the quantity of blood lost is, in some instances, enormous. Examples are recorded of its continuance for several days, and even weeks, — of the quantity of blood discharged amounting to ten, twenty, and even forty pounds.

In the second variety, — *hemoptysis — spitting of blood — bleeding from the lungs*, — it is often difficult to determine from whence the blood issues; whether from the fauces, posterior cavities of the

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nostrils, the lungs, or the stomach. In hemoptysis the blood is thrown up chiefly by coughing; the blood is of a florid, arterial hue; there is a sense of tickling about the fauces; moreover, it is usually preceded by flushed cheeks, more or less pain in the chest, with some degree of dyspnœa. Sometimes, however, there are no precursive symptoms, and the blood is rather hawked or spit up, intermixed, more or less, with saliva, and is of a darker color; but in this case an irritative cough ensues, and the blood is mingled with a frothy mucus. When the spitting of blood is from the cavities of the nostrils, it will cease on lying procumbent, or bending the head forward, and will then probably flow from the nose. When it proceeds from the fauces, the fact can generally be ascertained by ocular inspection.

In *hematemesis, — vomiting of blood — bleeding from the stomach*, — the blood is of a dark color, is thrown up by vomiting, and is usually intermixed with food; the discharge is preceded by tensive pain about the stomach, and accompanied with anxiety and faintness. In some cases the blood is discharged from the bowels at the same time.

In *hematuria, — bloody urine*, — the hemorrhage is from the bladder or kidneys, and the blood is discharged at the urethra, sometimes intermixed with urine. The evacuation is preceded by pain in the pelvic region, and accompanied with faintness.

Uterine hemorrhage is called *menorrhagia* in most medical books, and described as an excess of the menstrual discharge. This is a mistake. It is not a profuse catamenial secretion, but an actual bleeding from the uterine vessels. In fact, it is always attended with a real deficiency of the menstrual flux. It sometimes occurs in young girls from habits of self-abuse; and is very liable to attack unhealthy females on the final cessation of the menses, and occasionally attacks females far advanced in life.

In *anat* hemorrhage the blood flows principally from the hemorrhoidal vessels. It is preceded by a sense of pain and weight in the rectum, and when the patient is of rather full habit, by headache or vertigo.

All these varieties of hemorrhage are very frequently the result of external violence, or symptomatic of other local affections, in which case the treatment is to be mainly directed to the primary malady.

5. **Scurvy.** — The general symptoms of the scurvy — *scorbutus* — "livid spots on the skin, from extravasated blood; languor, and loss of muscular strength; pains in the limbs."

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The first variety — *simple* or *petechial* scurvy — is almost always a sequel of protracted and debilitating fevers, especially of the putrid type. Rarely, however, it occurs in persons of a gross and full habit, who are not regardful of hygiene in their personal habits. It is characterized by numerous small spots, resembling flea-bites, chiefly on the breast, arms, and legs; the visage is also pale.

In the *hemorrhagic* variety — *land scurvy* — the spots are circular, of a purple hue, and of different sizes; sometimes in stripes or patches irregularly scattered over the arms, trunk, and thighs; occasionally there is hemorrhage from the mouth, nostrils, or viscera; and there is great debility and depression of spirits. In severe cases the patient has the bloodless, exhausted appearance observed in anhæmia; and blood flows irregularly, and often profusely, from the lungs, stomach, intestines, and uterus, as well as from the mouth and nostrils.

In the *nautical* variety — *sea scurvy* — the spots are of different hues intermixed with livid, principally at the roots of the hairs; the teeth are loose; the gums are spongy and bleeding; the breath is very fetid, and the debility is extreme. The joints soon become weak, and there is often a shrinking of the flexor muscles, rendering the limbs useless, and constituting what has been called *scorbutic paralysis*. The spots often coalesce in large blotches, or form ulcers, which discharge a thin, fetid, sanious fluid, mixed with blood; and in the last stage blood is discharged from the viscera, as in the former variety.

Stale food, salted provisions, an exclusive flesh-meat diet, and vitiated air, are the ordinary producing causes; they are almost always associated with inattention to personal cleanliness. Either one of these causes alone may produce a modified form of scurvy, but all operating together generate the most aggravated cases.

6. **Plethora** — Is the result of excessive alimentation, or defective depuration, or both. Full feeding and inactivity are the producing causes.

The *sanguine*, or *entonic* variety, is distinguished by florid skin, full, strong pulse, turgid veins, with firm and vigorous muscular fibers; and the *serous*, or *atonic*, is denoted by a full but frequent and feeble pulse, smooth and soft skin, plump but inexpressive figure, and general languor or debility of the vital functions.

7. **Scrofula** (King's Evil). — The term scrofula — derived from *scrofus*, a sow — literally imports *swine-swellings*, *swine-evil*, or morbid tumors to which swine are subject. Scrofula has long been recognized as a disease common among swine, and it is doubt-

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ful if any of the domesticated swine are exempt from it. It is well known that all hogs fattened in the ordinary method are extensively diseased, and a source of disease to those who eat them. In this country the general employment of this filthy animal as food is the cause of many morbid affections, manifested under a great variety of scrofulous, erysipelatous, putrid, glandular, and skin diseases.

The Scrofulous Diathesis. — A scrofulous constitution means, simply, a frail, delicate, infirm, lax organization, a habit of body possessing a predisposition to the affection called scrofula, and peculiarly liable to develop glandular swellings, chronic ulcerations, tubercular formations, and visceral enlargements, whenever the exciting causes of disease are applied with ordinary intensity. The predisposition, however, under favorable hygienic influences, may lay dormant through life, and only be called into activity in the succeeding generation. The scrofulous constitution is said to be characterized by relaxed fibers, smooth and soft skin, fair and fine hair, a peculiar fullness and rosy appearance of the face, full upper lip, tumid alæ nasi, large eyes, long, silky eyelashes, delicate complexion, large head, precocious brain, great sprightliness, with feeble endurance. But it must be remembered that this description applies only to extreme cases, or in inherited diathesis. The most usual pathological indications of the scrofulous habit are strumous ophthalmia, chronic inflammation and suppuration of the glands of the neck, porriginous affections of the scalp, enlarged tonsils, rickets, spinal diseases, tabes mesenterica, white swellings, inflammation of the membranes of the brain, and tubercular consumption.

Symptoms. — The most common form of the disease — that form known as scrofula proper — appears in indolent glandular tumors, frequently in the lymphatics of the neck, but also often affecting the external or internal conglobate glands, suppurating slowly and imperfectly, and healing with difficulty. In size, these tumors usually range from that of a pea to that of a chestnut, but occasionally they are much larger. In some instances, scrofulous tumors appear in clusters about the neck, and armpit, and upon the breast. Usually the tumors which appear in infancy subside at the period of maturity. Scrofulous inflammation frequently attacks the external structures of the eye, the spongy, and sometimes the cylindrical bones, and the ligaments, cartilages, and membranes around the joints.

Whatever deteriorates the general health tends to bring the scrofulous predisposition into a state of activity. Various forms of scrofulous disease frequently follow severe febrile and obstinate cu-

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taneous affections, as measles, small-pox, scarlatina, yaws, syphilis, etc., and are then usually ranked among the sequelæ of those diseases. They are much oftener a result of the drug-medication. All mineral drugs, and particularly mercury and antimony, which are so freely prescribed in all the above diseases, have a powerful influence in exciting inflammatory action and tubercular depositions in scrofulous constitutions. Narcotic medicines, as opium, tobacco, alcohol, etc., are also efficient exciting causes.

8. **Cancer.** — The Greek word *carcinus* means a crab; and the disease is thus named from the crab-like ramifications of the dark, distended veins of the cancerous tumor. Any part of the body may become the seat of this affection, although secernent glands are most frequently attacked. The breasts of females, uterus, testes, glans, penis, tongue, stomach, cheeks, lips, and angles of the mouth, are its chief localities. The cancerous diathesis, like the scrofulous, may be either inherited or acquired; and notwithstanding many have regarded this disease as a purely local one, the majority now assent to the doctrine that the tropical affection depends on a peculiar constitutional distempter, taint, or mal-assimilation.

Symptoms. — A cancer commences with a hard, livid, knotty tumor, with dark, cancriform varices, intersected with firm, whitish, divergent bands. It is attended with acute, burning, lancinating pains, and terminates in a fetid, ichorous ulcer, having thick, livid, distorted lips.

In the breast, the first appearance of the disease is a small, indolent tumor, which is attended with an itching feeling; this is followed, after a longer or shorter time, by a pricking sensation, and this is succeeded by a shooting or lancinating pain; eventually a sense of burning is experienced, and the skin becomes livid and discolored. Adhesive bands are formed in the skin, which becomes puckered, and the nipple is drawn inward, sometimes entirely disappearing; the tumor ere long becomes more elevated, and feels knotty to the finger. At length the ulcerative process appears, by the integument giving way at different points, through which an ichorous, erosive fluid, sometimes tinged with blood, is thrown forth; as the ulcerative action advances, a broad, deep excavation is made, which discharges a most offensive and fetid matter.

Cancer of the uterus is known by darting pains in the part, shooting through the region of the pelvis, and usually indurations in the part, which are sensible to the touch; a preceding and immoderate menstrual or leucorrheal discharge, or both; and as soon as ulcer-

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ation occurs there is a sanious, bloody, or mixed discharge, characterized by the peculiar stench of the disease.

In the vagina and rectum the disease can be ascertained by the touch, in connection with the other symptoms; in the mouth, and on various parts of the external surface, it is obvious to the sight.

In the stomach it is with difficulty diagnosticated. An acute and burning pain, tenderness of the epigastrium on pressure, nausea, rejection of food, offensive fetor in the breath, are together strongly presumptive, though not absolutely pathognomonic, of the disease.

The most common of the exciting causes are external injuries, as blows, depressing passions, spirituous liquors, narcotic medicines, gross, high-seasoned food, etc. That our friends, the allopathists, regard the disease as in some way or other dependent on, or connected with, a specific virus is evident from the remedies which are put most prominently forward in their books. These are arsenic, henbane, and nightshade — the first a powerfully corrosive poison, and the last two deadly narcotics. The utter confusion which reigns in the brains of medical book-makers concerning the real nature, causes, and proper medication of cancer is evident enough from the following paragraph in relation to its treatment, found in a Medical Dictionary. After enumerating two or three hundred *internal remedies*, all of which *have* enjoyed a high reputation, but which can not *now* be depended on, comprising, in fact, nearly all the strong, pungent, powerful, and poisonous drugs and chemicals of the apothecary shop, our author remarks, —

"Of the numerous *external remedies* recommended at various periods, the preparations of arsenic and quicksilver, charcoal and carrot poultices; the mineral acids, particularly chlorine, hydrochloric, and chloric acids; the chlorurets, and *many* of the metallic salts, — are *deserving of notice* as discutients in the early stage of the disease, and as palliatives in its ulcerating state."

9. **Melanosis.** — The disease called *melanose*, or *black cancer*, consists in the formation of a morbid product of secretion, of a dark color, more or less inspissated, and staining or studding the organ or structure affected. Every part of the body is liable to these discolorations or tubercles, and sometimes all the structures are loaded with them.

Symptoms. — The color of melanosis varies from a dark yellow to brown, deep blue approaching to black, and to complete black, which is the most common. The secretion is easily detected by its peculiar shades of color in any part or organ containing it, as the

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surrounding tissues are lighter colored, and form a remarkable contrast with it; it is usually of a pultaceous consistence, the tubercles pea-sized to walnut-sized, and scattered in groups; they are sometimes situated upon the surface, but more generally below it; an irritative fever, mostly of the hectic form, attends, and the patient experiences great debility. The secretion is nearly destitute of smell and taste; and as no vessels or nerves have ever been in it, the matter appears to be an unorganized deposit.

10. **Catacausis.** — This is a condition of general combustibility of the body, produced by the too free use of alcoholic drinks. Examples of spontaneous combustion, as having occurred in persons long accustomed to the immoderate employment of spirituous liquors, are too well authenticated to be longer doubted. The condition of the body liable to this strange phenomenon may properly be called the *alcoholic diathesis*. In a majority of cases recorded, females advanced in life were the subjects of the malady. In some cases the self-consuming flame has arisen without any obvious exciting cause; but in others, a fire, a lighted candle, the heat of a stove, or an electric spark, has ignited the inebriate body. It is a remarkable fact that the flame which decomposes and reduces every fragment of the bodily structure to ashes, does not essentially injure the common furniture or bedding with which it comes in contact; and more marvellous still is the statement that water, instead of quenching the fire, seems rather to quicken it. As this is the only morbid condition known which renders the human body combustible, and the only morbid fire which hydropathy cannot extinguish, the subject need not be further prosecuted, save to point the obvious moral for the benefit of whom it may concern, — that all spirit drinkers burn, and mar, and disorganize their structures in an exact ratio to the amount of alcohol they consume, even if the alcohol does not consume them by a spontaneous, ingenerated fire in return.

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CHAPTER IX.

THE EYE.

THE morbid conditions of the organ of sight requiring attention in this chapter are arranged as follows: —

1. Inflammation.
2. Acute.
3. Chronic.
4. Purulent.
5. Infantile.
6. Granulated.
7. Nebulæ and Specks.
8. Ulcers — Cornea.
9. Pterygium.
10. Staphyloma.
11. Closed Pupil.
12. Cataract.
13. Amaurosis.
14. Strabismus.
15. Psorophthalmia.
16. Trichiasis.
17. Entropium.
18. Ectropium.
19. Hordeolum.
20. Excrescences.
21. Ptosis.
22. Fistula Lachrymalis.
23. Asthenopia.
24. Hemeralopia.
25. Nyctalopia.
26. Myopia.
27. Presbyopia.
28. Ecchymosis.
29. Substances in the Eye.
30. Burst Eye.

1. **Inflammation.** — The most common morbid affection of the eye is inflammation. It may attack any of its structures, but is most frequently seen in the membrane covering the external coat constituting the inflammatory states of the sclerotic, iris, retina, etc. As they should all be treated precisely in the same manner as acute or chronic ophthalmia, as the violence or mildness of their symptoms approximates the character of either, they need not be separately considered.

2. **Acute.** — This is the common form of active inflammation. It commences with a pricking sensation, as though dust was in the eye, soon followed by heat, redness, swelling, and extreme intolerance to light. Often there is severe headache, with more or less general fever.

3. **Chronic.** — This condition of sore eyes often results from riotous living, bad air, bad food, liquor, tobacco, etc., and is very often a sequel of maltreated acute ophthalmia. Millions of eyes are rendered miserable to look upon, or from, by the drugifications of doctoring, washes, lotions, leeching, blistering, bleeding, calomelizing, etc., to cure the acute form.

4. **Purulent.** — This form of inflammation is rapidly destructive, and requires prompt and energetic treatment. In addi-

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tion to the pain, heat, and redness of acute ophthalmia, it is characterized by the enormous swelling of the eyelids, followed by the discharge of a large quantity of thick, yellowish or greenish matter.

5. **Infantile.** — Children of a few days or weeks old are often attacked with this formidable malady. The symptoms, however, usually come on with less violence, and progress less rapidly. The common lotions and potions, washes and swashes, are very apt to aggravate the disorder, deform the eyelids, or destroy the sight.

6. **Granulated.** — In this affection the conjunctival membrane, or white of the eye, is raised into little projections, presenting a rough, irregular appearance. It is a consequence of long-continued or maltreated inflammation. If not cured, it may in time occasion opacities of the cornea, by the irritation it causes, followed by blindness. The only chance of cure is by a persevering course of general and local treatment.

7. **Nebulæ and Specks.** — Nebulæ are superficial deposits in the transparent part of the eye, giving it a cloudy appearance; opacities are deeper seated, producing a dense and pearly appearance. They are caused by inflammation.

8. **Ulcers of the Cornea.** — These occasionally result from long standing inflammation, and are also sometimes produced by mechanical and chemical irritants.

9. **Pterygium.** — A small, reddish, triangular tumor, growing from the inner cornea of the eye, or from some portion of the eyelid.

10. **Staphyloma.** — A pearly, conical, whitish tumor, formed by the enlarged cornea projecting between the lids. It is the consequence of severe ophthalmia, and of badly managed eruptive fevers, as the small-pox.

11. **Closed Pupil.** — Inflammation of the iris is sometimes followed by an obliteration of the pupil. Vision is often partially restored by forming an artificial pupil.

12. **Cataract.** — This is an opacity of the crystalline lens or its capsule. Its progress is very slow, and it generally commences without any apparent cause. The first symptom of the approaching disease is indistinct vision. Objects seem enveloped in a mist before the eyes. A speck can then be observed in the centre and behind the pupil. As the opacity increases, the sight grows dim, and vision is better in a moderate than a strong light.

13. **Amaurosis.** — A total or partial loss of vision from paralysis of the optic nerve, or an affection of the nervous structure of the retina. It is produced by inflammation, severe exposure to

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intense light, intemperance, gluttony, tobacco, alcoholic liquors, excessive night labor, etc. Milton was a notable example of this affection. The defect of vision comes on gradually: letters and other objects at first look misty or confounded, or run into each other; sometimes objects seem double, and at other times portions of objects are undistinguishable. Between the objects and the eye, numerous insects, cobwebs, or other substances, seem to be interposed. The eye itself manifests little or no change to the observer. Sometimes flashes of light appear before the eyes; and the head is often affected with vertigo, pain, and heaviness. Confirmed amaurosis is incurable. If taken in its incipient stage, it may be arrested and generally cured.

14. **Strabismus.** — Squinting, or cross-eyes, is sometimes congenital, and sometimes produced by diseases and accidents. Measles, dropsy in the head, worms, looking too much at objects obliquely, are exciting causes. More generally it results from a permanent contraction of a particular muscle, which holds the eye in a wrong direction.

15. **Psorophthalmia.** — A form of chronic inflammation of the eyelids, attended with itching, redness, watery discharge during the day, and a sticky, glutinous secretion during sleep. Its causes are the same as of chronic ophthalmia.

16. **Trichiasis.** — Irritative soreness of the eye, from the eyelashes growing in toward the ball.

17. **Entropium.** — The eyelid is sometimes inverted, or turned inward.

18. **Ectropium.** — An eversion or turning outward of the eyelid. It creates a hideous deformity.

19. **Hordeolum.** — Commonly known as *stye*. It consists of a small, inflammatory tumor near the edge of the eyelid. It is very painful, but generally suppurates and heals in a few days. Frequent bathing of the affected part with water, of a temperature most agreeable to the feelings, lessens the pain, and accelerates the cure.

20. **Excrescences.** — Wart-like and other trifling tumors sometimes form about the eyelids. They are easily and safely clipped off with the knife or a pair of scissors.

21. **Ptosis.** — A hanging down of the eyelid over the eyeball, from relaxation or paralysis of the muscle whose action elevates the lid. Frequent cold bathing, occasional head-baths, gentle manipulations over the eye with the bare hand, and attention to the general health, are all proper, and generally all are necessary.

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22. **Fistula Lachrymalis.** — This is a stoppage of the tear-passage, caused by obstruction from a thickening of its lining membrane. The tears, instead of passing off by the nose, run over the cheek, giving the eye a watery appearance, especially when exposed to wind or cold. In protracted cases, a swelling occurs at the inner angle of the eye, sometimes forming matter. Usually the general health is also disordered.

23. **Asthenopia.** — Weak vision. This depends on constitutional or local debility.

24. **Hemeralopia.** — Day-blindness. A peculiar sensibility of the retina, by which the patient sees better in the evening than in clear daylight. The Albino manifests more or less of this condition.

25. **Nyctalopia.** — This is the reverse of the former condition, the subject having natural vision in the daytime, but very imperfect in the evening or twilight.

26. **Myopia.** — Short-sightedness. The subject can not read ordinary print well beyond the distance of fifteen or sixteen inches. In looking at distant objects, he half closes the eyelids. It is most common in young persons.

27. **Presbyopia.** — Far-sightedness. The subjects of this complaint read with the book or paper at the distance of two feet or more. The cornea is too flat, the pupil is contracted, and the eyes have a more sunken appearance. It is most common to aged persons.

28. **Ecchymosis.** — "Rowdy's coat of arms." This is the common black eye of rowdy characters. Generally it comes from an unlucky blow; but a fall, sting of an insect, or leech bite, may produce it. Bathe freely in the coldest water.

29. **Substances in the Eye.** — Foreign bodies often insinuate themselves between the eyelids, causing great pain. Draw down the lower lid, and remove by a piece of moistened paper. If the substance be under the upper lid, place a bodkin across the lid, and draw back the lid so that it is completely inverted. Very minute pieces of iron are often driven with such violonce that a surgeon is compelled to cut them out; but the operation should not be attempted by other parties, as they may destroy the eye. Inflammation is very apt to occur after these accidents, for which the eye should be well bathed with tepid or warm water frequently, until the pain abates; then follow with cool, and finally cold applications.

Lime and Roman cement are very destructive to the eyes. Wash repeatedly with a mixture of a table-spoonful of some vegetable acid in a tumbler of water, as vinegar or lemon juice.

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30. **Burst Eye.** — From severe blows the eye is sometimes burst. Do not attempt to touch it, as vision may be irremediably damaged by touching it with the finger. The careful surgeon will frequently be enabled to preserve sight. Place the patient at once in bed, darken the room, and treat the subsequent inflammation with cool compresses.

CHAPTER X.

THE EAR.

The various affections of the organ of hearing are conveniently grouped under the general heads of *Inflammation* and *Deafness*, and will comprise, —

1. External Acute Otitis.
2. Internal Acute Otitis.
3. Chronic Inflammation.
4. Deafness.
5. Deafness from Colds.
6. Deafness from Hardened Ear-wax.
7. Deafness from Excrescences.
8. Deafness from Abscess.
9. Deafness from Caries.
10. Deafness from Altered Membrani Tympani.
11. Diseases of Eustachian Tube.
12. Deafness from Extravasation.
13. Nervous Deafness.
14. Dumb Deafness.
15. Senile Deafness.
16. Earache.
17. Foreign Bodies and Insects.

Inflammatory affections of the ear are usually distinguished into *acute* and *chronic;* the former being termed *otitis*, the latter *otorrhea*. Otitis has been divided into *external* and *internal*, as it affects chiefly the external or internal ear; and *otorrhea* has been regarded as *mucous* or *purulent*, according to the character of the discharge. Other distinctions have been predicated on the causes of the disease, as *scrofulous*, *syphilitic*, etc.

1. **External Acute Otitis.** — Acute inflammation of the external ear commences with slight pain, or sense of heat, or intense irritation, or itching, followed by more acute and distressing pain. The pain is augmented on pressure, by the motions of the lower jaw, and generally by the contact of very cold air, or very warm fluids. Hearing is confused, and unusual noises trouble the ear, and sometimes, within three or four days, a thin fluid is dis-

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charged from the meatus, which generally soon becomes thicker and puriform. Sometimes it is greenish, fetid, and extremely acrid. When the inflammation subsides, the matter hardens into a caseous or cheesy consistence, which, unless removed, obstructs the passage, and occasions partial deafness.

2. **Internal Acute Otitis.** — Acute inflammation of the internal ear is attended with a distressing sense of distention, painful throbbing, and nervous disturbance, consequent on the obstruction of the Eustachian tube, and the difficulty of discharging the secreted matter externally. The pain is deep-seated; there is often a feeling as though the ear would burst, and loud, clanging, or beating noises are heard, and the ear is painfully susceptible to sound. In some cases the face is flushed, the eyes are red and watery, the head delirious, and the attending fever of the typhoid character. If the disease is not speedily relieved, suppuration takes place, and the accumulated matters are discharged through an ulcerous perforation of the membrane of the drum, or into the throat by the Eustachian tube, or by a fistulous opening in the mastoid process of the temporal bone. The former is the usual termination; the second seldom occurs; and the latter result is extremely rare. Structural changes sometimes result from internal otitis, which partially or wholly destroy the sense of hearing.

3. **Chronic Inflammation.** — A prolonged discharge, or running from the ear, is frequently the consequence of acute otitis, and often one of the sequelæ of maltreated eruptive fevers, particularly small-pox, scarlet fever, and erysipelas. The *mucous* form is the most common among delicate and scrofulous children, and frequently, under the popular system of treatment, continues for years. The *purulent* variety is often connected with caries, or ulceration of the surrounding bony structure. The patient, in this case, complains of a dull pain in the ear, extending over the side of the head; of impaired hearing; and exhibits a dullness and heaviness of expression. The mastoid process is oftentimes the seat of ulceration, the external parts being then swollen and edematous.

4. **Deafness.** — The pathological conditions, structural and functional, of the various parts entering into the formation of the ear, which may produce a greater or less depravation of the sense of hearing, are very numerous, and many of them are exceedingly difficult. Fortunately, the worst cases are of rare occurrence, and those which are common are easily discriminated, and successfully treated.

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5. **Deafness from Colds.** — A state of atony, or subparalysis of the auditory nerves, from "taking cold," frequently occasions deafness in one or both ears, for days, weeks, or months.

6. **Deafness from Hardened Ear-wax.** — An accumulation of hardened wax, obstructing the function of hearing, is generally the result of an erythematic inflammation of the auditory passage. Persons of bad habit of body, torpid skin, deranged digestion, etc., are peculiarly liable to this affection. It is known by an increased sensibility or soreness in the meatus, a sense of itching, and often a burning or pricking sensation, confusion in the head, noises in the ear, with a tearing or dragging sort of pain about the ear and head.

7. **Deafness from Excrescences.** — Morbid excrescences, usually soft, wart-like tumors, or spongy vesicular polypi, are sometimes found in the ear-passage. They are the result of chronic inflammation of the follicles of the meatus, or the membrani tympani. These excrescences are red, sensitive, and readily bleed when irritated, except in a few cases, when they are hard and indurated. To detect their character the meatus must be examined with the ear speculum, or a common triangular reflecting prism of flint glass, by which light can be sent to the bottom of the external ear-passage.

8. **Deafness from Abscess.** — The abscess is a phlegmonous inflammation of the cellular tissue of the passage, usually caused by severe cold or exposure to strong currents of air. It should be treated precisely like acute inflammation.

9. **Deafness from Caries.** — Some persons are affected with, and children of a scrofulous diathesis are very liable to, an inflammation of the periosteum, which generally results in inflammation of the bony structure, and frequently terminates in exfoliation of the diseased bone, by which the passage is narrowed or obliterated.

10. **Deafness from an altered Membrani Tympani.** — Neglected or maltreated inflammatory affections are occasionally followed by a thickening, opaque, fungous excrescence, or destruction of the membrane of the drum. Sometimes the membrane, examined by the speculum, appears as if covered by small projecting glands or follicles; at other times it is very red and vascular, the blood-vessels being distinctly visible. The pain is accompanied by buzzings, as if something were fluttering in the ear, and by diminished hearing. The pain is increased by loud sounds, by variations of temperature, and by pressure upon the ear.

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11. **Deafness from Diseases of the Eustachian Tube.** — The Eustachian tube is sometimes obstructed by the presence of tumors in its vicinity, by inflammation resulting in swelling of the mucous membrane, effusion, constriction or obliteration of a portion of the canal. The wisest policy in these important cases is to be content with the thorough employment of all measures conducive to the general and local health, and consult an experienced physician.

Catarrhal affections, inflammation of the throat, and eruptive fevers, not unfrequently leave an accumulation of mucus in the Eustachian tube, obstructing it, and occasioning more or less deafness. In such cases cold water gargles are excellent.

An inflammation principally confined to the mucous membrane of the Eustachian tube, which is often but the extension of a disease of the throat, frequently causes deafness. When this inflammation is confined to the guttural part of the tube, the patient hears well at times, but only momentarily. His own voice sounds worse to him than the voices of others, and has sometimes a gurgling, crackling, or detonating sensation. The pain is greatly increased on gaping, or by the act of mastication.

Enlarged tonsils sometimes press upon the guttural extremity of the Eustachian tube, so as to produce deafness, as also do fungous excrescences, polypi, and enlarged parotid glands. Those obstructions, of course, must be removed by ligature or excision; though enlarged tonsils can be reduced by thorough general treatment.

12. **Deafness from Extravasation.** — External injury, violent sneezing, or severe constriction of the neck, may produce a lesion, causing an extravasation of blood in the cavity of the drum.

13. **Nervous Deafness.** — The term nervous, in this sense, is very indefinite. It is applied by medical authors indiscriminately to all forms of impaired hearing, unconnected with *apparent* inflammatory phenomena or structural changes. The proximate causes of this form of deafness are numerous: it may arise from simple atony, paralysis, or exhaustion of the nerves pertaining to the sense of hearing, or those nerves may be compressed by tumors, purulent formations, or extravasations, not manifested by any external symptoms; or from organic affections of the brain pressing on the origin of the nerves.

The most prominent symptoms which indicate compression of the nerves are vertigo or dizziness, severe and constant headache, noise in the ears, weak sight, and defective memory. It is generally

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curable, although the means applicable to the preservation of the general health may prevent the further progress of the condition producing the deafness, and in some cases the hearing may be greatly improved by the same sanitary measures, without medicines.

Palsy of the acoustic nerve arises from severe shocks, contusions of the brain, convulsions, apoplexy, fever, plethora, and still more frequently from sympathy with some chronic derangement of other parts or organs, generally the digestive. The reader need not, perhaps, be told that in all the affections of this class, which, in fact, are many, the prospect of cure depends entirely upon the general health, which can be restored by judicious and proper treatment.

14. **Dumb Deafness.** — Deafness in infancy may arise from original constitutional malformation, or from structural diseases occurring in the early periods of life. When congenital, it is incurable, but in many cases resulting from diseases in the first few years of existence, a cure may be effected by careful attention to the local condition and general health.

15. **Senile Deafness.** — Old age should not, in a natural development and decline of the bodily functions, be subject to deafness, blindness, nor other loss of external sensibility, only in the ratio that all the physiological functions cease to perform their offices. But the usual habits of living tend to thicken the fluids and hasten these results prematurely — the fine capillary vessels of the delicate structure of the organs of sense become obstructed, and their functions impaired disproportionately to those of other and more vital organs. Hence the great frequency of deafness in old persons.

16. **Earache — Otalgia.** — This is usually symptomatic of inflammation, or of foreign bodies or insects in the meatus. But the affection, considered as idiopathic, is of a nervous, neuralgic, or rheumatic character, coming on abruptly, and disappearing suddenly, and is unattended with febrile irritation. Noises in the ear, and slight deafness, are frequent accompaniments of otalgia.

17. **Foreign Bodies and Insects.** — Children at play occasionally put beans, peas, small pebbles, and other substances into the ear-passage. These may remain an indefinite time without trouble; but frequently inflammation and ulceration ensue, with a constant discharge of irritating or fetid matter. They often produce the most intense agony, and are sometimes so surrounded by fungous growths as only to be detected by the most critical examination with the speculum, forceps, or probe. If the body be

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hard, as a stone or metallic substance, the grating of the probe will discover it.

Their removal by mechanical means requires the most careful and dexterous management, to avoid injuring the adjacent structures.

Insects and worms sometimes effect a lodgment in the meatus, producing awful suffering. There is little doubt that inattention to cleanliness, particularly in diseased or ulcerated states of the passage, attracts the animals to deposit their ova there, which in time are converted into worms, and it is possible they may be generated there as they are in a morbid condition of the secretions of the mucous membrane of the stomach and bowels. In either case they are unprofitable and dangerous residents.

When they can be seen, they should be removed with the forceps. A pledget of lint, covered with some viscid substance, as oil and honey, to which worms when small and numerous will adhere, will often enable us to remove them. They may be destroyed also by narcotic poisons, as oil of almonds, or a strong infusion of green tea, or tobacco.

CHAPTER XI.

INFLAMMATIONS — ERYTHEMA.

In its more strict sense, erythema means inflammatory blush, being applied to those external manifestations which are not necessarily connected with fever. Erysipelas being usually limited to an eruptive fever, we therefore sacrifice uniformity in this chapter to convenience.

1. Erythema (varieties).
2. Nettle Rash.
3. Aphtha (thrush).
4. Bladdery Fever.
5. Yaws.

1. **Erythemas.** — All the varieties of erythema are characterized by red, tumid, fullness of the skin, disappearing on pressure, attended with a burning pain, and terminating generally in cuticular scales, or vesicles, sometimes in ulceration, and more rarely in gangrene.

In the *edematous* variety, the skin exhibits a bright scarlet color; the affection spreads widely and deeply through the areolar tissue, which often suppurates imperfectly, and occasionally sloughs and becomes gangrenous. The swelling is principally caused by extrav-

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asated serum; it is generally found in dropsical constitutions, and usually denominated "*edematous inflammation.*"

In *erysipelatous erythema* the color is of a deeper red, and superficial, with a determinate edge, usually in a serpentine or winding direction, the part first attacked healing as the disease extends over the surface. This form is called "*erysipelatous inflammation.*" Sometimes, though rarely, it is attended with some degree of extravasation, producing a soft swelling, and attended with a shining surface. It often follows wounds, injuries, and surgical operations. In some cases it extends beneath the skin, and runs into suppuration and mortification, constituting the *erysipelas phlegmonodes* of Galen.

Gangrenous erythema is characterized by a superficial dusky red color; a bloody serum separates the cuticle from the true skin; the cutis, when denuded, exhibits dark brown spots, which are disposed to blister and slough. It attacks chiefly the extremities. It is always found in extremely relaxed and debilitated constitutions, and is most common in advanced age. Either of the preceding varieties may pass into the gangrenous form.

In the *vesicular* variety the color is pale red; the surface is roughish, and covered with minute crowding vesicles, filled with acri, often reddish fluid. Authors distinguish two sub-varieties: the first, *benign*, in which the vesicles advance without a breach of the cuticle; and the second, *corrosive*, in which the vesicles break in the part first affected, and the corrosive fluid produces tracts of sanious ulceration as the redness advances. This and the preceding variety were called *ignis sacer — holy fire —* by the ancients, from the superstitious notion that they were special inflictions of the Deity, or of His ministers. There are also sub-varieties of this form of erythema, produced by the medicinal administration of mercury and arsenic; the former has been called *erythema mercuriale* and *hydrargyra.*

The *anatomical* variety is the erythematous inflammation which arises from dissection. Unlike all the other forms of erythema, and, indeed, unlike most other inflammations originating from a local cause, it commences, at least in the great majority of cases, with a constitutional febrile disturbance; the local affection first appearing about the shoulder or axilla, while the injured part shows little or no inflammatory action. The characteristic symptoms, as well stated by Dr. Good, are "inflammation, with lancinating pains about the axilla, shooting down the chest, ushered by severe rigors and anxiety, succeeding rapidly to the dissection of a fresh corpse,

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with a puncture or abrasion of the hand of the anatomist; blush, a deep crimson, with a spongy fullness, chiefly over the pectoral muscle; fever, a typhus." Those few cases in which the local symptoms take the lead of the constitutional, are always the least dangerous; and this remark probably holds true with every form of disease resulting from local injury or infection.

The local inflammation and the accompanying fever resulting from the bite of venomous serpents — as the cobra de capello, and rattlesnake, from whose virus death often results within twenty-four hours — in all essential circumstances resemble the erythema before us; the chief difference being that the local and constitutional symptoms both commence and continue simultaneously, while the progress of the disease is much more rapid, the vitality being, as it were, destroyed as by an electric shock, by the first impression of the poison.

There are also two classes of insects which occasion more or less local inflammation of an erythematic character, in some cases followed by a constitutional disturbance similar to that of anatomical erythema, and in a very few cases terminating in death. The first class — as bees, wasps, hornets, ichneumons, etc. — sting, and the second class — as the gnat, horsefly, flea, bug, etc. — pierce the skin and suck the blood. Whether the injury results mainly from poison, or the irritation of a rough, ragged wound, is not, in all cases, clear.

The variety called *chilblain*, or *pernio*, affects principally the hands and feet, and is occasioned by exposing the parts alternately to extreme cold and heat. In very cold climates the nose, ears, and lips are sometimes destroyed by it. The skin is of a crimson color, suffused with blue, and is troubled with an excessive and obstinate itching.

The remaining variety — *fret, intertrigo, erosion of the skin* — is generally seen behind the ears of children, and about the groins and anus of children and adults. The inflamed part is of a bright red color, the cuticle is eroded, and the exposed skin oozes a limpid and acrimonious fluid; the discharge is often peculiarly offensive. The theory of its nature is an erythema with weak vascular action, and often considerable irritability, in consequence of such weakness. The plain English of the matter is this: It is an erythema with filthy personal habits, and always considerable uncleanliness of the skin as a consequence of such habits. I have never known a man, woman, or child who took a daily bath or wash over the whole surface, to be troubled with it.

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2. **Nettle-Rash.** — The precursive fever is slight, although the stomach usually manifests considerable disorder. The rash appears about the second day, attended with a peculiar itching, like the sensation produced by nettle-stinging; the eruption wanders from part to part, and fades and revives irregularly. It terminates in a few days with cuticular desquamation.

3. **Aphtha** (Thrush). — This disease consists of minute vesicles, containing, when matured, a whitish or milky fluid. *Infantile*, or *white thrush*, appears in infants soon after birth, often extending from the mouth to the stomach, and even intestinal canal; the vesicles granular, roundish, and pearl-colored, and terminating in curd-like sloughs. *Malignant*, or *black thrush*, is seen most frequently as a symptomatic affection in typhus and malignant fevers; but it is said to be sometimes found idiopathically in old age, and other exhausted states of the vital powers; the fever is a strongly marked typhus, and the sloughs are dark-colored, or black. *Chronic thrush* is attended with great emaciation and hectic fever; the eruption extends through the whole length of the alimentary canal, the edges of the tongue are affected with pimples, superficial blisters appear within the mouth and fauces, and the stomach is at all times troubled with a sense of heat and soreness. Diarrhea often attends, and ulcerations of the bowels are frequent consequences.

4. **Bladdery Fever.** — This affection is generally symptomatic of visceral inflammation, and distinguished into several varieties. Its diagnosis is, transparent vesicles scattered over the body, filbert sized, with a red, inflamed edge, but without surrounding blush or tumefaction; the vesicles contain a fluid which is pellucid, or but slightly colored; on breaking, the vesicles are disposed to ulcerate; and the affection is accompanied with a fever of the typhoid type.

In the variety called *vulgaris — common vesicular fever* — the vesicles appear from the second to the fifth day, in successive crops, often extending over the mouth and intestine canal; another variety, called *glandular*, is preceded by a swelling of the neck and throat, and in Switzerland, where it has been chiefly noticed, it is considered as highly contagious; and a third form, termed *infantile vesicular fever*, attacks infants soon after birth.

5. **Yaws.** — *Rubula* and *frambœsia* are other terms by which this disease is known. It has been classed among the eruptive fevers, although the attending fever is merely adventitious; it resembles syphilis, and other infectious diseases, in being com-

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municable by contact; and the exanthems and contagious diseases, in rendering the body invulnerable to a second attack.

Symptoms. — The disease consists of numerous and successive tumors, commencing with mere specks, and gradually increasing to the size of a raspberry, which they somewhat resemble; some of the smaller papulæ become real pustules, and discharge an opaque, whitish fluid when broken, and concrete into dense scabs or crusts; the larger run into fungous excrescences, and in their granular surface, as well as size and color, resemble the raspberry, from which their name is derived. These tumors, one of which becomes, at length, much larger than any of the rest, have but little sensibility, suppurate very imperfectly, and discharge a sordid, ichorous matter. They originate in scattered groups over the body, and their connection with personal uncleanliness and infection is sufficiently evinced by the fact that they are chiefly found in the groins, axilla, about the anus and pudenda, though they often disfigure the neck and face.

This is one of the most unsightly diseases known; and nothing can exceed the revolting spectacle of a West India yaw-house, where the slaves, suffering under this disease, are collected together. We have two varieties — *African* and *American*. The diversity of the symptoms, however, is slight, and attributable wholly to local circumstances. In duration the disease varies from one to three months. Sometimes callous tumors are formed on the soles of the feet, in consequence of the yaw-tubercles not being able to press through the thick skin; these are called *tubba*, or *crab-yaws*, and greatly impede the exercise of walking.

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CHAPTER XII.

SPASMODIC.

We have in this chapter a variety of diseases, whose prominent features are, irregular muscular contractions, in some cases amounting to a more or less permanent rigidity of particular muscles, and in others attended with convulsive agitation of some part, or of the whole muscular system. These diseases are grouped as follows: —

1. Convulsion.
2. Epilepsy.
3. Hysterics.
4. Tremor.
5. Delirium Tremens.
6. Shaking Palsy.
7. Chorea — St. Vitus's Dance.
8. Raphania.
9. Barbiers.
10. Cough.
11. Dyspnœa.
12. Asthma.
13. Laryngismus.
14. Incubus.
15. Bronchitis.
16. Sternalgia.
17. Pleuralgia.
18. Hydrophobia.
19. Acrostismus.
20. Tetanus.
21. Lockjaw.
22. Cramp.
23. Spinal Disease.
24. Stiff Joint.
25. Wry Neck.
26. Hiccough.
27. Sneezing.
28. Palpitation.
29. Nictitation.
30. Subsultus.
31. Stretching.

The generic distinctions in the above arrangement may be thus defined: The *comatose* spasm is attended with muscular agitation, diminished sensibility, inability of utterance, followed by a tendency to drowsiness; the *synclonic* spasm is characterized by a simultaneous trembling, or chronic agitation of various sets of muscles, especially when excited by the will; the *suffocative* spasm disturbs, momentarily or permanently, the muscles of respiration alone; the *clonic* spasm is the forcible excitation of one or more muscles in sudden and irregular snatches; and the *constrictive* spasm is an irregular form of muscular contraction producing rigidity.

1. **Convulsion.** — Deaths from convulsion fits, especially among the infantile population of our country, are becoming alarmingly frequent. Its fatality ranks next to that from consumption, and is all the while increasing, and as far as able to gather information on the subject, the same is true of nearly all parts of the world. *Why* twenty or thirty children, all of them not far from two or three years of age, should die weekly the year round, in New York city,

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from this disease, may well engage the earnest thoughts of philanthropists and physicians, and, above all, of mothers.

Although convulsion occasionally attacks persons in all periods of life, the disease, as already intimated, is conspicuously frequent and fatal in infancy. Pregnant women are also, after the sixth month, during labor, and immediately afterward, liable to the disease then denominated *puerperal convulsions*.

Symptoms. — The muscular agitations are violent, and with very young children the spasmodic movements are extremely rapid; the fingers work, and the eyelids quiver; the teeth gnash; sometimes the convulsive motions skip from one part to another; at other times the body is universally convulsed; occasionally the paroxysms intermit and recur at irregular intervals; often they are accompanied with shrieks or yells. In infancy, the disease is usually preceded by twitchings and startings, and accompanied with a blueness about the eyes and upper lip. When it occurs in adults, the muscles are powerfully exercised, the mouth foams, the eyelids open and shut perpetually, or are stretched upon a full stare, while the protuberant eyeball rolls rapidly in every direction, and the whole face is hideously distorted.

The disease before us is one of the many special evidences of the general bad feeding, bad dressing, bad doctoring, and bad management that rule in the nursery. Prominent among the special causes may be named concentrated food and confections, baker's bread, sweet-cakes, candies, etc.

2. **Epilepsy** (Falling-Sickness). — Epileptic fits present all degrees of violence, from a slight general spasmodic agitation and distortion of the muscles of the face, with a momentary suspension of consciousness, succeeded by a sense of drowsiness or stupor scarcely appreciable, to the most violent convulsive movements of the face and chest, while the limbs are fixed and rigid, and followed by several hours of total unconsciousness.

Symptoms. — In some instances the disease is ushered in by precursive symptoms, which warn the patient of the approaching attack. The most usual of these is a sensation of a cold creeping vapor from some particular part of the body. But more generally the paroxysm comes on suddenly, and often commences with a startling scream; the patient is instantly deprived of all sense of perception and power of motion, and if standing, he falls, while the body is more or less convulsed; the muscles of the face and eyes are always much affected, and the countenance violently distorted; the tongue generally protrudes from the mouth, which discharges a

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frothy saliva; the lower jaw is strongly convulsed, and the teeth, gnashing upon the tongue, often wound it severely; sometimes the urine and feces are discharged involuntarily. A profound lethargic sleep succeeds the severer attacks, from which the patient at length awakes, unconscious of having suffered pain.

When the disease is owing to an organic cause, the attack is more abrupt; the patient suddenly falls prostrate; there is more rigidity and less spasmodic agitation of the muscles, and optical illusions are very common. This form of epilepsy has been called *falling-sickness*, or *cerebral epilepsy*.

The organic causes are various structural derangements, as misformation of the head, external injuries, internal tumors or collections of matter. When the disease is functional, the causes which specially excite the paroxysm in the individual predisposed to it, are — strong mental emotions, especially of the depressing kind, as anger, grief, fright; indigestible food, an overloaded stomach, or any source of gastric irritation, may prove an exciting cause; repelled eruptions, and the sudden suppression of customary evacuations, have induced it; exhausting indulgences, either in the exercise of the lower animal propensities, or in the use of stimulants and narcotics, frequently occasion an attack; confirmed drunkards are peculiarly liable to it; in a few instances the disease has arisen from worms.

3. **Hysterics** (Hysteria). — This disease is commonly supposed to be peculiar to the female, but there are two varieties — *hysteria femini*, and *hysteria masculini*. It is certainly more frequent in the female, and most disposed to show itself during the menstrual period.

Symptoms. — The precursive signs, which, however, do not always exist, are — a sense of nausea or sickness, flatulency, palpitation, depression of spirits, weeping, crying, etc., without any assignable cause. The fit soon follows, indicated by a coldness or shivering over the whole body; quick, fluttering pulse; a feeling of acute pain in the head, as though a nail were driven into it; there is often an acute sense of pain in the left side, about the flexure of the colon, with a sense of distention, giving the idea of a ball or globe rolling itself about in the abdomen, and gradually advancing upward till it gets into the stomach, whence, rising to the throat, it occasions a sense of suffocation, as if an extraneous body were pressing there. The convulsive struggle now commences, which is sometimes extremely violent; the trunk of the body is twisted backward and forward, the limbs are variously agitated, the fists are firmly

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clinched, the breast is spasmodically beaten, the muscles of the chest are agitated in every way, and the patient bursts into violent paroxysms of laughter, sobbing, or screaming, utters incoherent expressions, and is in a state of temporary delirium. On the cessation of the spasms, there are flatulent eructations, and a copious discharge of limpid urine; the patient usually lies stupid, and apparently almost lifeless, for a short time, but in an hour or so recovers the exercise of sense and motion, without retaining any distinct recollection of what has taken place, but feeling a severe pain in the head, and a general soreness over the whole body. Hysteria may be distinguished from epilepsy by the insensibility being only partial; by the sighing and sobbing respiration; by the globus hystericus; by a peculiar trembling of the eyelid; and by the absence of distortion of the features. Intense mental emotions, especially grief and anxiety, constipated bowels, excessive evacuations, obstructed menses, plethora, hot, enervating drinks, are the causes.

4. **Tremor** (Trembling). — A tremulous agitation of the head, limbs, or both, especially on some voluntary exertion, often occurs in the progress of acute and chronic diseases. But in some instances the affection appears disconnected, as far as we can observe, with any distinct primary disease, although it is manifestly in all cases symptomatic of nervous exhaustion. It is produced by violent exertion, vehement indulgence of the mental or sexual passions, by various poisons, as mercury, lead, opium, tobacco, etc.

5. **Delirium Tremens.** — This disease is unfortunately very frequent, to which may be added, that hardly a day passes without some suicide or murder being chronicled in the newspapers as committed under its influence; nor can any different result be expected so long as such quantities of poor liquor are drank.

Symptoms. — Delirium, during which the patient recognizes those about him, answers questions rationally, and does hurriedly what he is told to do; the hands, lips, and muscles generally, tremble more or less, especially when speaking, or making any voluntary effort; the patient is restless, sleepless, talks incessantly, and evinces a great anxiety to be doing something; he fancies that he is surrounded with enemies, or that he is in a strange place, from which he is constantly endeavoring to escape; or he thinks some great evil has befallen him, or is impending; he is suspicious of those about him, and is tormented with frightful images or sounds, and often appears to be searching earnestly in unlikely places after

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something on which his mind is intent. There is frequently profuse perspiration, a frequent pulse, and a moist and slightly furred tongue. In the most dangerous attacks the patient is himself not violent; but in more moderate cases, when the muscular energies are less prostrated, he is sometimes extremely furious.

The habitual employment of alcoholic beverages is, in most cases, the producing cause; in a few instances the disease has arisen from the use of opium, tobacco, etc.

6. **Shaking Palsy.**—The term palsy is not strictly applicable to this disease, for the reason that, although there is a diminution of muscular strength and of voluntary power in the parts affected, there is no absolute loss of muscular motion, nor of sensation, one of which, or both conditions, being always present in genuine paralysis.

Symptoms.—"Permanent agitation of the head or limbs without voluntary excitement; body bent forward, with a propensity to run and fall headlong; usually appearing after maturity." The first symptoms usually noticed are a slight sense of weakness, with a proneness to trembling, commonly in the hands and arms, but sometimes in the head. These increase gradually and almost imperceptibly, until, in a few months, the legs begin to be similarly affected, and the body bends forward. As the disease progresses, the tremor becomes constant and universal; the muscles refuse to act in obedience to the will; and, should the tremulous agitation be stopped in one limb by a sudden change of posture, it soon makes its appearance in another. When he attempts to walk he is thrown on his toes and fore part of his feet, and thus compelled to adopt a running pace. In the advanced stages the tremulous motions also occur during sleep; the bowels become torpid, mastication and deglutition are difficult, and the saliva continually dribbles from the mouth. Toward the closing scene, the power of articulation is lost, the ordinary evacuations are involuntary, and coma with slight delirium occurs. Long exposure to damp, unwholesome vapors, nervine excitants, as ardent spirits, narcotic poisons, as tobacco, nightshade, etc.; metallic vapors, especially mercurial; drastic purgatives, are the causes.

7. **Chorea** (St. Vitus's Dance).—This disease is characterized by "alternately tremulous and jerking motion of the face, legs, and arms, especially when voluntarily called into action, resembling the grimaces and gestures of buffoons." The name of St. Vitus's Dance, according to Horstius, was given to this affection, or some other resembling it, in consequence of the reputed

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cures produced on certain women of disordered mind, upon their visiting the chapel of St. Vitus, near Ulm, and dancing from morning till night, or until completely exhausted. Many marvellous stories are related of these dancers by the old writers, some of whom, in their easy credulity, give the patients credit for having danced a whole week or whole month together.

Symptoms. — The disease appears most frequently from the eighth to the fourteenth year, and attacks boys and girls indiscriminately, but chiefly those of weak or impaired constitutions. Its approaches are slow, and are marked by variable and often ravenous appetite, loss of usual vivacity, swelling and hardness of the lower belly, and, in general, constipated bowels, which symptom becomes aggravated as the disease advances; slight, irregular, involuntary motions of different muscles, particularly those of the face, precede the more violent convulsive agitation. The convulsive motions present a great variety of appearances. The muscles of the extremities, of the face, those moving the lower jaw, the head, and the trunk of the body, are each at different times, and in different degrees, affected, the patient walks unsteadily, his gait resembling startings or jumpings; and sometimes walking is impossible. The agitation of the muscles is constant during the day, but ceases during sleep. The eye eventually loses its luster, the complexion becomes pale, and the countenance is expressive of languor and vacancy, giving the patient a fatuitous appearance.

8. **Raphania.** — This disease was first described by Linnæus, and so named because he supposed it to arise from eating the seeds of a species of wild radish. Other writers have imputed it to spurred rye or ergot, and others to still other vegetable poisons.

Symptoms. — The disease commences with cold chills and lassitude, headache, and anxiety about the præcordia; these are followed by spasmodic twitching, and afterward rigid contraction of the limbs or joints, with excruciating pains, often accompanied with fever, coma, or delirium, a sense of suffocation, and a difficulty of articulation. It continues from one to four weeks, and when fatal, terminates with a diarrhea, or convulsive paroxysm.

Notice. — An anomalous disease has, during the last ten years, prevailed in different parts of this country, more frequently in our Western States, to which the physicians have been unable to assign a name, and which strikingly resembles the disease before us. If it is not identical so far as its causes are concerned, it is similar in character.

9. **Barbiers.** — This affection is probably unknown in this

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country. It is common to various parts of India, and of very frequent occurrence in Ceylon, and on the Malabar Coast.

Symptoms. — General lassitude, painful numbness of the whole body, stiffness of the legs and thighs, and a spasmodic retraction of the knees, and inability to walk, are among the early symptoms. In some cases the limbs are paralytic, and spasmodic actions affect irregularly the muscles of the body, chest, and larynx. In a later period of the disease, the legs swell, and subsequently the whole body becomes bloated and edematous, the internal cavities are filled with fluid, and, in fatal cases, extreme difficulty of breathing, great restlessness, intolerable anxiety, constant vomiting, and general convulsions, close the scene. Sudden transitions from a dry to a damp atmosphere, and from sultry calms to chilling breezes, are assigned, by medical writers, as the principal causes.

10. **Cough.** — There are three kinds of cough which are ranked as idiopathic diseases by authors — *common cough*, *dry cough*, and *hooping-cough*. They are all attended with a sonorous and violent expulsion of air from the lungs, from a spasmodic or convulsive action of the respiratory muscles; the first and second varieties are often symptomatic of a multiplicity of other diseases.

Symptoms. — *Common cough*, or *humid cough*, is accompanied with an expectoration of a mucous or serous fluid. The *dry cough* is so called because it is unattended with expectoration. In the *hooping-cough* — *kin-cough*, *pertussis* — it is accompanied with a shrill, reiterated hoop; vomiting is also a frequent incident. The last variety is contagious under certain circumstances. The disease comes on with the usual symptoms of catarrh; the excretion is always viscid, though small in quantity at first. The hoop, or sonorous spasm, is frequently violent, the face becoming turgid and purple from suffusion, and the eyeballs swollen and prominent. The paroxysms at first recur several times during the day, are most violent toward evening, and least so during the night. After the disease has continued some time, they return only in the morning and evening, and toward the end of the disease in the evening only. The violence of the disease varies from the slightest indisposition without feverishness, to the severest spasmodic agitation, attended with high and dangerous fever. Its duration varies from one week to one year, the usual period ranging from three weeks to three months. The pathognomonic sign of the hooping-cough is the noisy inspiration accompanied by a lengthened hissing. It is generally a disease of children, and the danger is in the inverse ratio to the age.

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11. **Dyspnœa.** — The generic symptoms of this disease are, permanent difficulty of breathing, with a sense of weight in the chest.

SYMPTOMS. — Idiopathic difficulty of breathing is distinguished into two varieties, *chronic* and *exacerbating* — the *orthopnœa* of authors. In the former the breathing is uniformly short and heavy, and usually accompanied with a cough; in the latter it is deep, stertorous, and suffocative, subject to sudden and irregular exacerbations, and relieved by an erect position. It is distinguished from asthma by the breathing being permanently, yet irregularly, affected; whereas in asthma the difficulty is recurrent, with considerable intervals of perfect ease.

12. **Asthma.** — This affection is, too, much more frequently a symptomatic than an idiopathic affection. Its pathognomonic characteristics are, recurrent and temporary difficulty of breathing, accompanied with a wheezing sound, and sense of constriction in the throat, with cough and expectoration. There are two varieties, *dry*, *convulsive* or *nervous*, and *humid* or *common*.

SYMPTOMS. — In the *first* variety the attacks are sudden, violent, and of short duration; the sense of constriction is hard, dry, and spasmodic; cough slight, expectoration scanty, and only appearing toward the end of the paroxysm. In the *second* variety the paroxysm is gradual and protracted; the constriction heavy, laborious, and humid; cough violent; the expectoration commences early, is at first scanty and viscid, but afterward copious, and affording great relief. In many cases the attack is in the night, and most frequently an hour or two after midnight.

It is frequently caused by turgescence, or swelling of the liver or spleen, which impedes the motions of the diaphragm, or interrupts the supply of nervous influence. Strong mental emotions, repelled eruptions, suppressed discharges, rank odors, foggy, misty, or damp weather, indigestible food, and other dietetic errors, are frequent exciting causes. The predisposition is sometimes occasioned by malformation of the chest, small size of the glottis, dyspepsia, all of which may be conditions of hereditary transmission.

13. **Laryngismus.** — This complaint is known by the various synonyms of *spasmodic croup*, *spasmodic asthma of children*, *child-crowing*, *crowing inspiration*, etc.

SYMPTOMS. — The disease consists, essentially, of a sense of spasmodic suffocation in the larynx, which usually comes on suddenly in the night, attended with a struggle for breath, and a shrill, croaking sound of the voice, or crowing inspiration, somewhat analogous to croup; the countenance is flushed and swollen, and in the

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severest cases convulsions occur. This disease sometimes, though rarely, attacks adults.

It is distinguished from croup by the attack being more sudden, and the symptoms relaxing or intermitting; the freedom of the breathing during the intervals; the absence of febrile or catarrhal symptoms; and usually the presence of hot, swollen gums.

14. **Incubus.** — There are two varieties of incubus, one of which is called *nightmare*, and the other *daymare*.

Symptoms. — Both varieties are attended with sighing, suffocative difficulty of breathing, intercepted utterance, or entire temporary inability to speak or move, with a sensation of some external weight pressing heavily on the chest, from which the patient awakens affrighted. In the *daymare*, which occurs during wakefulness, the sense of pressure is severe, and is extended over the abdomen; the respiration is frequent, laborious, and constricted; the eyes are fixed; the sighing is deep and violent; and the intellect is undisturbed. The *nightmare* is the more common form; it occurs during sleep, which is interrupted with a violent struggle and tremor; the pressure on the chest seems to be that of some hideous monster or phantom; it is usually preceded by a painful or troubled dream, during which the patient imagines some position of danger, as a high building, steeple, or precipice, from which he is about to fall; or fancies some horrid accident or calamity, as murder or suicide; or conceives an attack from some enemy, hag, spectre, ghost, or goblin, whose grasp he is incapable of eluding.

It is generally occasioned by excessive fatigue, exhaustion from want of sleep, an overloaded stomach, or some indigestible irritant in the alimentary canal.

15. **Bronchitis.** — Although this disease is attended with more or less suffocation and spasmodic respiration, it is really caused by, or rather is, in fact, an inflammatory affection of the mucous membrane of the bronchial ramifications. It is frequently the precursive condition of consumption; and not unfrequently the treatment pursued by the medical man rapidly hastens on the fatal termination, by developing tubercles in the lungs. It is, comparatively, a modern disease, and is alarmingly on the increase, owing to luxurious and enervating habits.

There are the *acute* and the *chronic* forms; but as the former is not essentially different from a severe catarrh, or mild pneumonia, either in its symptoms, progress, or termination, it is only what is usually known as *chronic bronchitis* that concerns us here. Irritative and inflammatory affections of the mucous membrane of the

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throat, fauces, larynx, pharynx, and adjacent parts, are often confounded with bronchitis proper; and are described as and confounded with this disease under the various terms of *pulmonic erysipelas, pituitous catarrh, bronchial angina, suffocative catarrh, catarrhal bronchitis, bronchial peripneumony, pulmonary catarrh, catarrhal fever, acute mucous catarrh, acute suffocative catarrh*, etc.

Symptoms. — The disease commences with more or less cough, irritation about the throat, sense of tightness in the chest, and shortness of breath, which do not for a considerable time attract much attention. The first difficulty which is generally noticed as of importance is a sense of roughness, with frequent attempts to clear the throat, accompanied with, or followed by, titillation of the larynx, exciting a dry, hard cough; these are, after a longer or shorter period, succeeded by some degree of hoarseness of voice, with a sense of tightness across the chest, and sometimes a slight pain or diffused soreness upon coughing or inflating the lungs fully by a prolonged and deep inspiration. As the disease progresses, dyspnœa comes on, which is increased by exertion, coughing, or exposure to cold, and some degree of expectoration occurs, at first scanty, then more copious, and of a glairy appearance, like the white of an egg; and in still more advanced stages it becomes muco-purulent or purulent, and sometimes tinged with blood. In some cases, all of the symptoms are abated every summer and exacerbated every winter for several years in succession. The constitutional disturbance is marked by lassitude, pains in the limbs and back, slight shiverings or chills, frequent and feeble pulse, feverishness after dinner or toward evening, and eventually night sweats. In some cases the principal local symptoms are, hoarseness or loss of voice, a hard, dry cough, with a sense of soreness, rawness, dryness, and heat under the sternum; in most cases the cough is always excited by a full inspiration; in a few instances the breathing is rattling or wheezing, owing to the air struggling through the viscid mucous accumulations in the bronchi; and sometimes, though rarely, the voice is scarcely altered, while the breathing, on the slightest disturbing causes, becomes painfully spasmodic, in consequence of the tenacious, glairy secretion becoming concreted upon the lining membrane of the bronchial tubes. All the causes of consumption may, under a modified set of circumstances, produce this form of pulmonary disease.

Before dismissing, I must advert to the cauterizing practice which has lately become so popular in bronchial and throat affections. Some physicians are doing an extensive business in the application of nitrate of silver to all sorts of affections of the mouth and throat;

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and machinery has recently been invented by which the dust of lunar caustic can be inhaled into the lungs. It is true that caustics will often cure ulcers in the mouth, or about the fauces or tonsils; but they are very liable to reappear, and, moreover, they can be better cured without the caustic than with it. But where the lungs are seriously affected, or the bronchial ramifications in a state of actual inflammation, the application of the caustic very frequently aggravates the affection of the pulmonary tissues, as is known in very many cases. This practice may be safe in purely local affections of the throat, but it is certainly hazardous where the lungs are implicated.

16. **Sternalgia.** — This affection is described under the varied names of *angina pectoris*, *syncope anginosa*, *orthopnœa cardiaca*, *arthritic*, or *dolorous asthma*, and *sternocardia*.

Symptoms. — The disease is characterized by a violent pain about the sternum, or breast-bone, extending toward the arms, attended with anxiety, difficulty of breathing, and a sense of suffocation. Authors describe two varieties, — *acute*, in which the attack comes on suddenly during exercise, with a tendency to faint, and which is relieved by rest; and *chronic*, in which the paroxysm is less violent, of longer duration, recurring frequently, and excited by slight causes, attended with palpitation, and not relieved by rest. Corpulent, gouty, rheumatic, and debilitated persons are especially the subjects of its attacks; hence the usual causes of obstruction and nervous exhaustion may be regarded as its predisposing influences.

17. **Pleuralgia.** — This term imports pain in the side, and is employed to denote a pungent pain in the side, with difficulty of breathing, which difficulty is owing to an acute distress or ache produced by every attempt to inflate the lungs. It is distinguished from pleurisy or pneumonia by being unattended with fever or inflammatory symptoms.

Symptoms. — In the *acute* or severe form, which is called *stitch in the side*, the pain is sudden and temporary, supervening on exercise, and being relieved by repose. In the *chronic* form the pain is permanent, augmented by pressure, and there is inability of lying on the side affected.

18. **Hydrophobia** (Canine Madness). — Hydrophobia literally means *water-dread*, a symptom which generally, though not uniformly, attends the disease, and is, in some instances, found in other diseases.

Symptoms. — The disease generally commences with pain, uneasiness, or some unusual sensation in the wound, or bitten part,

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followed by pains darting along the course of the nerves. But in some few cases these local symptoms do not appear. The first constitutional symptoms are, wandering pains in different parts of the body, stiffness of the neck and throat, restlessness and irritability; the patient is drowsy or depressed; he is observed to sigh deeply and frequently; a principal feature among the early symptoms is a sudden and deep inspiration with which the patient is frequently affected. He is also severely agitated by the impression of cold air, the glare of a mirror, the noise of a pump, the sound of water, etc. As the disease progresses, its true nature becomes revealed by the difficulty of swallowing liquids, which increases until the sight or sound of water causes him to start with dread and horror; the attempt at deglutition is hurried, accompanied with sobbing, and followed by convulsions. The countenance now expresses indescribable alarm, anxiety, and suspicion; the eyebrows are contracted; the eyes are wild, staring, and glassy; there are urgent thirst, hot and dry skin, painful efforts to vomit, and intolerance to light and sound. The sufferer spits out the frothy mucus and viscid saliva between his closed teeth, with vehement strainings, which occasion a singular sound; talks in a loud, important, authoritative tone, and often screams violently. In some instances the intellect seems unaffected to the last; but in other cases he is wildly delirious, and talks incoherently and incessantly. Toward the end, convulsions become more frequent, and the patient dies asphyxiated or exhausted.

The duration of the disease is usually two or three days; in some rare instances it has continued eight or nine days. The symptoms also manifest considerable diversity. Sometimes the wounded part exhibits nothing more than a slight lividity; and sometimes the cicatrix opens afresh, and oozes forth a little colored serum. In some cases the patient is furiously mad, bites himself and others, also the bed-clothes, and whatever else is within reach.

This disease is usually communicated by the bite of a rabid animal; but it may originate spontaneously. The nature and origin of the virus, or infecting principle, are unknown. But that putrid flesh and decomposing offal, on which so many dogs, cats, hogs, etc., are fed, are the chief producing causes, is attested by the frequency of its occurrence in those animals. But this cause alone does not seem capable of generating the poison. Some excitement, or feverish heat of the blood, must coöperate. It is well known that violent passions have, in the human being, and in various domestic animals, changed the saliva in a moment to an absolute virus, which has communicated disease and death to others. Thus the bite of an enraged

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man, horse, hog, goose, duck, and hen, has been known to impart a deathful infection.

19. **Acrotismus.**—The affection called *acrotism*—*pulselessness*—is a failure or cessation of pulsation for a longer or shorter period, sometimes affecting only particular parts of the system, and sometimes extending over the whole body, often accompanied with paleness, chilliness, pain in the epigastrium, and a sense of spasmodic constriction in the respiratory muscles.

It is often precursive of palsy and apoplexy, sometimes symptomatic of organic derangements; but is sometimes produced by functional derangement of the stomach, liver, or spleen, or some obstruction to the equable radiation of the nervous energy. Some persons have possessed the ability to produce, by voluntary effort, a universal deficiency of pulsation, and of simulating natural death.

20. **Tetanus.**—Several forms in which this disease presents itself, have been designated as varieties,—*emprosthotonos*, when the body is bent rigidly forward; *pleurosthotonos*, when it is rigidly bent laterally; *episthotonoi*, when rigidly bent backward; *erectus*, when rigidly erect, etc.

Symptoms.—The character of the disease is a permanent and rigid contraction of many or of all the voluntary muscles, with incurvation of the body, and difficulty of breathing. Generally the extremities are firmly extended, the abdominal muscles strongly retracted, the eyes fixed, the forehead drawn up into furrows, and the whole countenance is shockingly distorted; the violent contractions are attended with excruciating pain; the pulse is accelerated; the respiration is very laborious, or almost suspended; and the skin is covered with a profuse perspiration. The symptoms frequently remit partially, but are renewed with aggravated torture by the slightest cause, as the least motion of the patient, or slightest touch of an attendant. Sometimes the tongue is darted spasmodically out of the mouth, and the teeth, spasmodically snapping upon it, lacerate it severely, unless prevented by some intervening substance. In fatal cases death is preceded by frothy or bloody mucus at the mouth, small and imperceptible pulse, and delirium.

Sudden exposure to damp and cold when the body is overheated; wounds, punctures, lacerations, or other local irritations of nerves; the bad air of crowded hospitals; extreme terror, or violent passion; sympathy; long exposure to a very hot sun; various narcotics, as strychnine, or nux vomica, etc., are the causes.

21. **Lockjaw.**—This disease differs from the former in the spastic rigidity of the muscles being chiefly confined to the

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lower jaw; from which circumstance many authors regard it as a mere form or variety of tetanus. It has also been designated as *traumatic*, when arising from wounds, surgical operations, or other local injuries; and *catarrhal*, when produced by colds. Sometimes it attacks infants soon after birth.

SYMPTOMS. — Sometimes the attack is sudden, but usually the symptoms come on gradually; there is more or less of an uneasy sensation at the root of the tongue, and some degree of difficulty of swallowing. The spasms sometimes extend to the muscles of the chest or back; the breathing is nasal; articulation is interrupted and slow; the muscles of the nose, lips, mouth, and of the whole face are fixed and distorted, and the jaw-bone is often so firmly set as to break before the muscles will yield to mechanical force.

22. **Cramp.** — This affection is often symptomatic, as in various species of colic, cholera, and other diseases. Pregnant women, whose habits are too sedentary, or whose diet is too concentrated, are often troubled with fugitive cramps about the hips, or in the muscles of the lower extremities.

SYMPTOMS. — The disease consists of a sudden contraction and convolution of one or more muscles, attended with extreme but temporary pain. The stomach, neck, calves of the legs, and toes, are the parts most frequently attacked. When the hollow viscera or membranous muscles are affected, the pain is agonizing, a violent perspiration usually breaks out, and the part feels as though it were puckered and drawn to a point. When the stomach is attacked, the breathing is short and distressing.

Sudden exposure to cold or damp when the body is relaxed; flatulence of the stomach or bowels; long-continued pressure; overstretching the muscles, etc., are the frequent causes.

23. **Muscular Distortion of the Spine** (SPINAL INCURVATION). — "Spinal disease," "spinal weakness," "spinal irritation," etc., are among the rapidly-increasing diseases which tell of our enervating habits and consequent physiological degeneracy. Spinal distortions may result from organic affections — caries or injuries — of the vertebral column, or from osseous malformation, as in rickets and scrofula; but the great majority owe their existence to simple muscular debility.

There is no part of the great field of "medical science" in which a more blundering pathology, a more unfortunate diagnosis, and a more empirical practice prevail than that relating to spinal complaints. All through the country weakly females abound, whose backs have been blistered, burned, scarred, cauterized, leeched,

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cupped, scarified, pustulated, and otherwise tortured, with the view of *counter-irritating* a spinal disease, when, in fact, they have had no spinal disease at all! Any form of indigestion, any morbid condition of the liver, kidneys, and any form of mismenstruation, may produce a sympathetic irritation of some portion of the spinal column; and in many of these diseases of the abdominal and pelvic viscera, a tenderness will be found by pressing firmly on that part of the spine from which the nerves are sent off to the organ or part really diseased. This symptomatic tenderness the doctor mistakes for an idiopathic disease, and plies his destructives accordingly. Again, when the whole body is debilitated by fine food, hot drinks, close rooms, sedentary habits, etc., the whole muscular system is necessarily relaxed; it has not sufficient firmness and elasticity to sustain the trunk of the body erect, and perform its varied motions with ease and energy; hence, like the masts of a ship, when the ropes are weakened or destroyed, the vertebral column bends, leans, or tips backward, forward, or to one side — usually the latter; and again the medical man, misapprehending the state of affairs, instead of attending to the health in general, and strengthening the weak muscles in particular, administers his internal drugs and drastics, and puts on his external liniments and plasters, or endeavors to give support to the falling frame by binding it up with a set of awkward and complicated machinery. Thousands of females have had real diseases inflicted upon them by the physician's attempts to cure the imaginary one.

The "small of the back" is the center of the whole muscular system, it is the strong or weak point with every person, and no less than three hundred distinct muscles are concerned in the complicated movements of the vertebral column; hence it is not difficult to understand how a relaxed or weakly condition of the general system should be especially manifested in a muscular distortion of the spine.

24. **Muscular Stiff Joint.** — This affection, which consists of a permanent and rigid contraction of one or more articular muscles or their tendons, may arise from spasmodic contraction or from simple atony; the former kind often results from rheumatism, and the latter from long confinement or neglect of use; colds, strains, and inflammations occasionally produce it.

25. **Wry Neck.** — A permanent contraction of the flexor muscles of one side of the neck, or a loss of the balance of action between the flexors and extensors, by which the head is drawn obliquely to the right or left, may be occasioned by a natural dis-

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parity in the length of the opposite muscles, or by a spasmodic fixation of one or more muscles on the contracted side, or from debility of the muscles on the opposite or yielding side; or from the two last conditions combined. The first variety is generally congenital, but sometimes results from burns and other injuries; colds and strains are the usual causes of the last three varieties, the curative method for which is the same as for the preceding disease.

26. **Hiccough.** — The disease before us, and all others arranged under the head of *chronic spasm*, are frequently symptomatic affections. In rare instances, however, they seem to occur idiopathically; that is to say, without any other apparent and well-defined primary malady to which they can be imputed.

Symptoms. — Hiccough is defined, a convulsive catch of the respiratory muscles, with sonorous inspiration, iterated at short intervals. The spasmodic action, as in the case of vomiting, is principally made by the diaphragm and external abdominal muscles.

27. **Sneezing.** — Sneezing is a convulsive motion of the respiratory muscles, by which air is driven violently and suddenly through the nostrils, producing a sonorous expiration. In the natural order of things the act is intended to eject from the mucous membrane of the nostrils any irritant or offensive material which effects a lodgment there. Snuff-takers frequently so obstruct and paralyze the nervous sensibility, that it is impossible to excite sneezing by all the pulvurulent narcotic the nose is able to receive; while the undepraved instinct will raise a violent commotion against the smallest particle of obnoxious dust or mephitic vapor.

28. **Palpitation.** — A subsultory vibrative motion may be limited to the heart alone, or the trunks of some of the larger arteries alone, or affect their ramifications in the viscera, constituting palpitation of the heart, of the arteries, and complicated or visceral palpitation.

Symptoms. — Palpitation of the heart is a vibratory and irregular action, sometimes sharp and strong, and then called *throbbing of the heart*, and sometimes soft and feeble, when it is termed *fluttering of the heart*. In some instances the force of the heart's contraction has been so great as to shake the bed, be heard across the room, rupture the ventricles, and even fracture the ribs. In very nervous or irritable persons the palpitation often shoots from one artery to another, and sometimes a preternatural pulsation pervades every part of the body, the morbid sensibility being so acute that the patient not only feels the universal throbbing, but actually hears it.

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The temporal and carotid arteries are particularly subject to a migratory throbbing, which may be synchronous, or alternating with the beating of the heart. In dyspeptics, the descending aorta is often the seat of a most disagreeable throbbing, not unfrequently mistaken for aneurism. Palpitation is always symptomatic of some organic or functional difficulty, commonly the latter. All visceral obstructions, and every form of indigestion, are liable to be attended with this symptom. The use of tobacco, strong coffee, green tea, or ardent spirits, very frequently produces the worst and most obstinate attacks.

29. **Nictitation.** — A rapid and vibratory motion, or *twinkling* of the eyelids, is named as a distinct disease by some authors. When the eye has been frequently exposed to dust, or pungent gases, vapors, etc., a morbid sensibility sometimes remains after the cause of irritation has been removed, producing an irregular, convulsive, and unsightly winking.

30. **Subsultus.** — Sudden and irregular twitches or snatchings of the tendinous extremities, are generally indicative of extreme debility, and are hence common in low fevers, and the latter stages of many fatal disorders. But sometimes a feeble convulsive action is local and habitual. Nervous and irritable persons, of otherwise fair health, sometimes are troubled with a jerking, spasmodic action of the muscles of the shoulders, hands, feet, etc.

31. **Stretching.** — It requires some stretch of imagination to regard what defines "transient elongation of the extensor muscles, usually with deep inspiration and a sense of lassitude," as a distinct disease. *Yawning*, *gaping*, and *stretching* are instinctive efforts to recover the balance between the flexor and extensor muscles, and are sometimes excited by misposition, and at others by certain morbid conditions, as nausea, the shivering stage of fever and ague. Most frequently, however, that kind of stretching which authors have dignified with the title of a malady, under the name of pandiculation, is symptomatic of indolence; hence it is rather peculiar to loungers, who "cannot rise from the sofa without stretching their limbs, nor open their mouths to answer a plain question without gaping in one's face." The remedy is business and occupation.

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CHAPTER XIII.

TORPITUDE IN GENERAL.

THE diseases embracing this portion of our work are distinguished by general muscular immobility, with mental or bodily stupor, forming a striking contrast with those in the preceding chapter, and are named as follows: —

1. Asphyxia.	3. Catalepsy.	5. Apoplexy.
2. Ecstasy.	4. Lethargy.	6. Palsy.

1. **Asphyxia** (APPARENT DEATH). — The term *asphyxia*, or asphyxy, is often used in the limited sense of *acrotism*, or pulselessness, and is generally restricted to that suspension of all the powers of sensation and voluntary motion which are immediately owing to non-arterialization of the blood from interrupted respiration. But in a more comprehensive sense it has been, and in the present sense is employed to denote all cases in which a total or partial suspension of the mental and corporeal functions characterize the access of the disease.

SYMPTOMS. — These vary with the producing cause. In asphyxia from *suffocation*, as in hanging or drowning, the countenance is turgid, and suffused with livid blood; the eyeballs are protruded.

When the asphyxia is produced by inhaling carbonic acid — *choke-damp* — or other irrespirable gas or mephitic exhalation, the countenance is pallid, the whole surface is also pale, and death often takes place instantly, save when the deleterious aura is largely diluted with common air, in which case the symptoms more or less resemble apoplexy. Of the gases positively pernicious to breathe, are the carbonic acid, often found in close rooms where charcoal has been burned, in the bottom of wells, or large beer-casks, and in natural caverns; the carburetted hydrogen, and various compound gaseous products evolved from decomposing animal and vegetable substances, and from the putrefying corpses of cemeteries; and of the negatively injurious gases — those which do not support respiration — are hydrogen and nitrogen; some of their compounds, however, with sulphur, carbon, and phosphorus, are absolutely destructive. The fumes of mercury, lead, and various other metallic substances,

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when highly concentrated, operate with as sudden fatality as the fumes of charcoal.

In electrical asphyxia, which is produced by a stroke of electricity or lightning, the limbs are generally flexible, the countenance is pale, and the blood is incoagulable; usually the limbs do not stiffen after death, and the body becomes rapidly putrescent. Sometimes no external injury whatever is observable; but in other cases the skin is vesicated, the hair is scorched, and the body more or less lacerated and torn.

When the disease results from intense cold — frost-bitten asphyxia — the limbs are rigid, the countenance pale and shrivelled; it comes on more gradually than the other forms; there is a tendency to sleep, which increases as the period of exposure is extended; and when this is joined with fatigue, the torpor and droweiness often become irresistible.

Various narcotic poisons, as cicuta, tobacco, and Prussic acid, when taken in large quantities, and also the *anæsthetic* agents, as ether and chloroform, in extreme doses, will produce asphyxia, attended with total insensibility and universal muscular relaxation.

2. **Ecstasy.** — This affection is peculiar to those states of bodily derangement of which mental aberrations or extravagances are symptomatic; hence it attacks chiefly melancholic, hypochondriac, visionary, and abstracted persons.

Symptoms. — The paroxysm consists of a sudden and total suspension of sensibility and voluntary motion, the pulsation and breathing continuing, with rigid muscles, and an erect and inflexible position of body. In most cases there is also a complete suspension of mental power. The duration of the fit varies from two or three hours to as many days, at the end of which the patient rouses as from sleep.

3. **Catalepsy.** — The only essential distinction authors make between ecstasy and trance is that of the flexibility or inflexibility of the muscles. In the disease under consideration the muscles are lax and yielding, and the body yields to and retains any given position. The eyes remain open, and are fixed intently upon some object, but usually no perception accompanies the apparent vision. The fit generally comes on without premonition, and in most cases closes with singing. Its duration is from a few minutes to several days. This affection is sometimes counterfeited, and the real disease has been sometimes mistaken for actual death.

4. **Lethargy.** — *Deep sleep* does not perfectly express the leading character of this disease, as it is sometimes wanting. Leth-

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argy is distinguished from asphyxia, ecstasy, and catalepsy, by the apparent general ease and quietude of the body; and from apoplexy, by the eyelids being closed and the limbs gently reclining, as in natural sleep.

Symptoms. — Sometimes the sleep is profound, and without intervals of sensation, waking, or consciousness. Sometimes the sleep is remissive, and the patient occasionally awakens and recovers sensation and speech, constituting the *coma somnolentum* of authors; and in a third variety — the *typhomania* and *coma vigil* of pathologists — there is a perfect lethargy or insensibility of the body, while the mind is only imperfectly lethargic, manifesting confused and wandering ideas, and, during sleep, possessing a belief of wakefulness. This form is frequently a symptom in various fevers. Violent mental commotion, fright, furious anger, excessive mental labor, night-work, repelled eruptions or exanthems, congestion or effusion in the brain, are the causes.

5. **Apoplexy.** — This disease is one of the results of a constipated, obstructed, plethoric, and overburdened body. Excessive alimentation, with defective depuration, and some internal visceral obstructions or compressions, are the obvious conditions on which the apoplectic fit depends, and hence we rarely witness the disease except among the full-fed, the corpulent or obese, and the gross or high livers; and even then we almost invariably find inattention to the functions of the excreting organs or outlets of the body among the predisposing circumstances.

Symptoms. — The distinctions which authors make of this disease, into *sanguineous* and *serous*, *entonic* and *atonic*, *simple* and *congestive*, etc., are unimportant, as they relate only to the greater or less debility of the patient at the time of attack. Sometimes the disease comes on suddenly without the least premonition; sometimes the attack is preceded by a sudden paralysis of one side of the body, and sometimes it is ushered in by acute headache, nausea, faintness, noises in the ears, confused vision, incoherence of ideas, loss of memory, and numbness of the extremities. The fit is characterized by complete insensibility; slow, noisy, and usually stertorous or puffing breathing; impeded deglutition; flushed and livid countenance; prominent and motionless eye, and generally a fixed or contracted state of the pupil; the limbs are rigid, motionless, or convulsed; the bowels are obstinately constipated, or the feces pass involuntarily; the urine is passed unconsciously, or retained until the bladder is full, then dribbling away. The pulse is variable; it may be full, hard, and quick, or weak and frequent. It may be

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distinguished from the *stupor of drunkenness*, by the alcoholic odor of the breath in intoxication, and from the *narcosis* produced by various poisons, by the capability of occasionally rousing the patient in the latter affection.

6. **Palsy** (Paralysis). — The same general causes which tend to the production of apoplexy, are among the most efficient predisponents to palsy. The disease before us, however, is more frequently dependent on organic changes; and when merely functional, is more generally connected with nervous exhaustion. The ancients regarded apoplexy and palsy as modifications of one essential disease; "apoplexy being a universal palsy, and palsy a partial apoplexy."

Symptoms. — Paralysis may be attended with a total or partial loss of sensation only in the part affected, or a loss of voluntary motion only, or of both. The precursive symptoms are sometimes the same as those of apoplexy, but more generally the disease comes on gradually, an occasional sense of weakness, and troublesome but transient feelings of numbness being the leading admonitions; and these are often observable in a single finger, in one eye, the tongue, or one side of the face alone.

In the *hemiplegic* variety the disease is confined to one side of the body, which is affected from the top to the bottom of the mesial line. This form is often a sequel of apoplexy.

In the *paraplegic* variety the lower part of the body is paralyzed on both sides, or any part below the head. When not caused by some local injury, it is almost always preceded by costiveness.

Particular or *local* palsy is confined to particular limbs, or to a particular part of the body. When it affects the face, the expression of countenance is peculiar, the features are drawn to one side, and of course the two sides are not symmetrical, and the deformity is increased when the patient attempts to whistle, speak, laugh, cry, sneeze, or cough.

A variety of local paralysis, to which those who work in quicksilver mines, at water-gilding, etc., are subject, called *mercurial tremor*, comes on with weakness and convulsive twitchings in the arms, gradually extending to the lower extremities, and finally to the whole body; and another variety, called *lead palsy*, or *dropped hand*, which attacks glaziers, plumbers, oil-painters, enamel card-makers, etc., begins by a feeling of weakness in the fingers, and extends to the wrist, but rarely beyond it; shooting pains affect the arm and shoulder; the parts affected waste and emaciate, and the hand hangs loosely and uselessly at the wrist. Most of the causes

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of apoplexy are enlarged or indurated liver or spleen; constipation; venereal excesses; metallic fumes; narcotics; alcohol; pungent stimulants; acrid medicines, as copaiva, turpentine; sudden and extreme alternations of temperature; pressure upon the brain, spinal marrow, etc., etc.

CHAPTER XIV.

TURGESCENCE — VISCERAL.

Fullness, or Turgescence, may exist in any part or organ in temporary obstructions, congestions, or inflammations. This chapter is limited to those affections of the internal viscera in which the enlargement is chronic, or permanent, including the varieties named below: —

1. Enlargement of the Liver.
2. Enlargement of the Spleen.
3. Enlargement of the Pancreas.
4. Enlargement of the Mesentery.
5. Enlargement of the Intestines.
6. Enlargement of the Omentum.
7. Complicated Visceral Enlargements.

1. **Enlargement of the Liver.** — The structure and functions of the liver, as heretofore explained, denote the reasons why the liver is more subject to chronic enlargement than any other organ in the body. The morbid alterations of structure which constitute its intumescence are various, as simple swelling, tubercular formations; hydatid growths; hardening, or induration; softening, or fatty degeneration; and that result of bad living and putrescent blood which pathologists have called *black ramollissement*, in which the organ is reduced to a dark-colored mass of very little consistence, etc., — conditions which are difficult of diagnosis during life. Another form of structural derangement has been called *gin-liver*, in which the biliary portion of the liver is both hypertrophied and indurated, as well as dropsical, from the effect of the free use of ardent spirits.

Symptoms. — With general derangement of health, and various symptoms of indigestion, particularly pale, yellow countenance, irregular and often whitish injections, a hard tumor may be found in the right hypochondrium, verging toward and often appearing at the pit of the stomach. In dropsical persons the swelling is sometimes

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enormous. An enlarged or indurated liver is common to persons who have suffered frequent or prolonged attacks of ague and fever, and has been denominated *ague cake.* All the common causes of vitiated blood and impure secretions tend to disease the liver; but an obstructed skin, by which the decomposing and putrescent particles of the body are retained in the system, is the most efficient among them.

2. **Enlargement of the Spleen.** — Pathologists seem to be generally of the opinion that structural disorders of the spleen occasion but very little mischief to the organic economy. I think differently. It is true that the consequences are much less apparent; but if the opinion I have heretofore advocated respecting the functional office of the spleen is correct, a derangement of its function must be followed by a loss of power, to some extent, throughout the entire range of the organic or nutritive functions; although such result would not be manifested by any special local symptoms, as in the case of a similar morbid condition of the liver.

Symptoms. — It is known by an indurated tumor in the left hypochondrium, verging toward the spine; as with the preceding disease, there are symptoms of general ill health; but while in enlargements of the liver these symptoms assume the forms of jaundice and dyspepsia, they will, in induration of the spleen, appear in the shape usually termed nervous debility. The patient seldom complains of pain in the region of the organ affected; his appetite is good, but he loses flesh and muscular strength; his features have a dark, bilious, or mahogany hue; the skin is dry, the lips are pale, and the patient is not infrequently morose and desponding. The disease often appears after obstinate intermittent or remittent fevers; scrofulous constitutions, and constitutions debilitated by intemperance, are very liable to it; marshy situations and stagnant waters occasion it; it has followed suppressed menstruation; and medical authors name Peruvian bark, which is so immoderately administered in intermittent fevers, as a cause of enlarged spleen. This affection is also called *ague cake.*

3. **Enlargement of the Pancreas.** — This is a rare disease, or, at least, rarely detected in the living subject; but occasionally abscesses, scirrhous indurations, tubercles, calculous depositions, etc., have been found to occupy a part or the whole of its structure.

Symptoms. — These are obscure, except in extreme cases, when a hard, elongated tumor may be detected, extending transversely in

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the epigastric region, and accompanied with symptoms of dyspepsia and general debility.

4. **Enlargement of the Mesentery.** — Enlargement of this structure may be in the form of hydatids, of tubercles, scirrhous induration; fleshy, adipose, or fungous excrescences, or calculous deposits; or several of these morbid alterations of structure may be coëxistent.

Symptoms. — The affection may be known by an indurated and irregular mass of tumors below the stomach, yielding to the pressure of the hand; the countenance is pale and bloated; the appetite is irregular, often voracious; and general atrophy or emaciation attends.

5. **Enlargement of the Intestines.** — In some cases the induration is confined to the coats of the intestines; and in others, adhesions unite the intestines to the walls of the abdomen, and to each other.

Symptoms. — The intumescence may be round or elongated, hard or circumscribed; but it is movable by pressure made with both hands; the action of the bowels is irregular; there is usually obstinate vomiting, and more or less fever and emaciation.

6. **Enlargement of the Omentum.** — Turgescence of the omental portion of the peritoneum is usually of a complicated character — indurated, scirrhous, cartilaginous, and tuberculated; in some instances the structure acquires almost a stony hardness.

Symptoms. — The tumor is indurated and diffused, extending frequently over the entire abdomen; it is accompanied with general emaciation and difficulty of breathing.

7. **Complicated Visceral Enlargement.** — This is merely a conjoint existence of several of the diseases we have already considered. It is denoted by a hard, elevated, and distended abdomen, resembling that of pregnancy; the belly is, however, more or less knotty and unequal; the respiration is but slightly disturbed; but there are usually acute pain, thirst, nausea, and vomiting. A diseased liver is the common starting point of these structural monstrosities.

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CHAPTER XV.

DROPSY.

THE principle forms of diseases contained in this chapter are named as below: —

1. Cellular Dropsy.
2. Dropsy of the Head.
3. Dropsy of the Spine.
4. Dropsy of the Chest.
5. Dropsy of the Abdomen.
6. Dropsy of the Ovary.
7. Dropsy of the Fallopian.
8. Dropsy of the Womb.
9. Dropsy of the Scrotum.
10. Wind Dropsy.
11. Inflammatory Dropsy.

It is amusing to read the lengthened discussions which have been carried on by medical theorists respecting the proximate cause or essential nature of dropsy; one party regarding it as a disease depending on diminished absorption, and the other as ably contending that the fault consists in increased exhalation. The practice predicated on the former theory is stimulation, and on the latter, antiphlogistication. But as neither quinine nor bleeding effected a cure, a third party has lately entered the field of controversy, and cut the Gordian knot, by blending both doctrines in one; and declaring that diminished absorption *and* increased exhalation produced the disease, the therapeutic indication being to balance the action between the absorbents and exhalents. To this party we are indebted for the mercurial treatment of dropsy, which has proved even *worse* than its *bad* predecessors.

1. **Cellular Dropsy.** — This affection is called *anasarca* when it extends over the whole body, and *edema* when limited to the areolar texture of the limbs.

SYMPTOMS. — Cold and diffusive swelling or puffiness of the skin, which pits beneath the pressure of the fingers; the intumescence is greatest in depending situations; and around the feet and ankles the accumulation increases toward evening, and decreases during the night. The skin is paler than natural, and when the distention is great it assumes a shining appearance, which often becomes livid and discolored, and not unfrequently bursts in extreme cases.

All the causes of general debility predispose to dropsy. In-

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temperance, repelled eruptions, exhausting discharges, suppressed evacuations, and structural or functional obstructions of the kidneys, skin, and liver, pregnancy, etc., are among the frequent causes.

2. **Dropsy of the Head.** — External dropsy of the head, consists of an accumulation of watery fluid in the ventricles or convolutions of the brain, or between the membranes, or between the bones and dura mater; and internal dropsy, is an inflammation of the membranes or substance of the lower part of the brain, which, in its progress, runs into suppuration, and produces effusion into the ventricles.

Symptoms. — In the first variety there is an edematous intumescence of the head, while the sutures of the skull are usually separated; the whole head appears preternaturally large, and the fontanelles are prominent; in its advanced stages it is attended with languor, drowsiness, costiveness, vomiting, coma, frequently convulsions, and sometimes strabismus. The second variety — the *cephalitis profunda* of Good's nosology — comes on gradually and insidiously; the precursive disturbances are languor, inactivity, loss of appetite, feverishness, etc.; these are followed by darting pains in the head, great sensibility to light, contracted pupils, extreme restlessness, frequent sighing, disturbed sleep, from which the patient often starts with a scream; in a later stage the bowels are irregular, the pulse small and frequent, and delirium and convulsions sometimes occur; as the disease progresses the pupil dilates, the eyes usually present a squinting appearance, and a low moaning takes the place of the shrieks; and near the fatal termination, double vision or loss of sight, with lethargic stupor, or violent convulsions, occur. Hydrocephalus is peculiar to infancy, and sometimes commences in the fetus. Scrofulous, scorbutic, or syphilitic taint; repelled eruptions; injury to the brain during labor; bad dietetic habits of the mother during pregnancy; frequent exposure of the mother during pregnancy, or of the child soon after birth, to the powers of narcotic poisons, particularly tobacco, are the causes.

3. **Dropsy of the Spine.** — This affection is mostly congenital; it consists of a soft fluctuating tumor on the spine, from fluid accumulated within the coats of the spinal cord, protruding externally in consequence of some portion of the vertebral column being defective.

4. **Dropsy of the Chest.** — In this affection the fluid may accumulate in the cavity or cavities of the pleura on one or both sides, or in the mediastinum, or pericardium, or even the

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cellular texture of the lungs. These distinctions, however, are neither possible to ascertain during life, nor important practically.

Symptoms. — With a constant sense of oppression in the chest, there is difficult breathing on exercising or reclining; the countenance is more or less livid; the urine scanty and high colored; the pulse is irregular; the extremities are edematous; the patient is often troubled with startings and palpitations during sleep; a distressing feeling of suffocation frequently attends; and the patient can get no rest but in the erect posture. It usually attacks persons in advanced life.

5. **Dropsy of the Abdomen.** — *Ascites*, or dropsy of the belly, is called *encysted*, when the fluid is contained in a cyst or sac of adventitious formation, instead of accumulating in the cavity of the abdomen itself.

Symptoms. — It is known by an equal, tense, and heavy intumescence of the whole belly, which distinctly fluctuates to the hand, upon a slight stroke being given to the opposite side.

In the *encysted* form, the size of the abdomen enlarges gradually and steadily, without experiencing any sudden increase, decrease, or change in the swelling; whereas the distention is often temporarily diminished by treatment or accidental causes, when the accumulation is within the cavity of the abodmen; from *ovarian dropsy*, by the intumescence commencing lower down and on one side in the latter disease; from *tympanites* by the dullness on percussion, and by the fluctuation; from *retention of urine*, by the dribbling of water in the latter affection; from *pregnancy*, by the fluctuation, and state of the menses and breasts; and from *cysts* or *hydatids* of the liver, by the swelling in the latter case being more circumscribed, and commencing on one side of the upper part of the abdomen.

Repelled eruptions, or exanthems, very frequently produce this disease. Mercurial ointments, lead washes, and other discutient and repellent lotions and medicaments, have often changed the morbid action from an external skin disease to an internal dropsy. Suppressed catamenia and metastatic gout are also frequent causes; and it is often symptomatic of diseased or disorganized liver, kidneys, and other organs.

6. **Ovarian Dropsy.** — Dropsy of the ovary is always of the encysted character, and the cysts are generally combined with enlargement of the ovary itself, which becomes converted into a hard, whitish, cartilaginous mass.

Symptoms. — The tumor commences on one or both sides of the

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iliac region, and gradually spreads over the abdomen; its surface is unequal, and its fluctuation is obscure and feeble, and in some cases entirely imperceptible. The general health is at first but little impaired. The causes of ovarian dropsy are similar to those of ascites.

7. **Fallopian Dropsy.** — Dropsy of the Fallopian tube is extremely rare; in its early stage it is known by a heavy, elongated swelling of the iliac region, spreading transversely, with obscure fluctuation. The quantity of fluid is generally greater than that accumulated in the preceding variety.

8. **Dropsy of the Womb.** — This disease is generally the result of some structural affection of the uterus. In some few cases, when the orifice of the uterus is closed, water collects in its cavity; sometimes a large cyst, or cluster of hydatids, originating between its tunics, is discharged, accompanied with severe flooding; and occasionally the fluid accumulates in its cellular tissue, by which the organ is distended to an enormous size, while the whole abdomen appears anasarcous.

Symptoms. — Heavy, circumscribed tumor or protuberance in the hypogastric region, attended with obscure fluctuation, and progressively enlarging; the mouth of the uterus is thin and yielding, and the complaint is unaccompanied with pregnancy or ischury.

9. **Dropsy of the Scrotum.** — In some cases the fluid is contained in the tunica vaginalis, or surrounding sheath of the testis; sometimes in the cellular membrane of the scrotum; and in a third variety the fluid has accumulated in the tunica vaginalis of the spermatic cord. *Congenital hydrocele* is that form of the disease in which the communication between the cavities of the peritoneum and tunica vaginalis is enclosed, the fluid collecting within the latter.

Symptoms. — The *vaginal*, or first named variety, is the proper hydrocele. The intumescence is soft, transparent, and pyriform; it is unattended with pain, and enlarges gradually. In some cases the tunic is so distended and transparent that a candle may be seen through its contents.

10. **Wind Dropsy.** — This affection, which is caused by an accumulation of air in the natural cavities, differs from dropsy proper in the distention being elastic and sonorous. Sometimes the disease results from external injuries penetrating the lungs; sometimes the air is formed by a process of putrefaction or decomposition; and sometimes it is secreted directly from the blood.

Symptoms. — In the *cellular* variety — the *pneumatosis* of Sau-

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vages — the distention is sometimes limited to particular parts of the body, and sometimes extends over the whole surface. It is marked by a tense, glabrous, diffusive intumescence of the skin, which crackles beneath the pressure of the fingers. When arising from a wound in the chest which penetrates the lungs — *traumatic emphysema* — the inspired air may rush into the cavity of the chest, the cellular membrane of the lungs, and even become diffused throughout the areolar tissue, producing a universal inflation, which is attended with violent palpitation and extreme danger of suffocation. Occasionally the inflation is confined to one side of the chest; it is then called *pneumo-thorax;* and this form is sometimes produced by ulcerations which destroy some part of the pulmonary structure. When arising from fish-poison, mushrooms, or other venom, the disease is accompanied with extensive signs of putrescence and impending mortification.

In the *abdominal* variety — *tympany* — there is a tense, light, and equable distention of the belly, which distinctly resounds to a stroke of the hand.

When the uterus is inflated with air, there is light, tense, circumscribed intumescence in the lower part of the abdomen, obscurely sonorous, and accompanied with occasional discharges of wind through the mouth of the womb.

11. **Inflammatory Dropsy.** — This term is awkward, but, unfortunately, I can not find in the whole range of pathological nomenclature any more appropriate one.

Symptoms. — In the tumid leg of childbirth, which has been variously denominated, the attack usually comes on in the second or third week after parturition; the intumescence is pale, glabrous, equable, elastic, and acutely tender; to the touch there is a sensation of numerous irregular prominences under the skin, and it is accompanied with a constitutional febrile disturbance of the hectic type. In a majority of cases the attack commences with pain in the groin of one side, accompanied with fever, and followed by a swelling, which extends down the thigh and leg to the foot, and in a day or two the whole limb is double its natural size, hot, smooth, exquisitely tender, and moved with great difficulty. The fever usually begins to decline in two or three weeks, but in some cases runs for six or eight weeks, causing extreme emaciation. In a very few instances both limbs are affected simultaneously; and in still rarer instances the arms have been attacked; in many cases the affected limb has remained enlarged and weak through life. It may be

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added here that a disease very like the one before us, if not identical, has sometimes affected the male sex.

The second variety, the *Barbadoes leg — elephant leg* — is common to hot climates, especially the West Indies, Arabia, and the Polynesian Isles, where it is called *yava-skin*, from the supposition that it is caused by drinking a heating beverage called *yava;* and like the gout among ourselves, is regarded in a sort of *honorable* light. It is known, however, in temperate climates, and a few cases have occurred in the United States.

CHAPTER XVI.

MIS-OSSIFICATION.

THE above title, though taken from the most prominent symptom of the present group, — being indicative of an excess, deficiency, or malassimilation of the bony structure, — does not well express the essential nature or proximate cause; we include, —

1. Rickets.	3. Mollities Ossium.	5. Osthexy.
2. Cretinism.	4. Fragilitas Ossium.	6. Exostosis.

1. **Rickets.** — This disease is probably of modern date. The first account we have of it was published by Glisson, as it occurred in England in the middle of the seventeenth century.

SYMPTOMS. — The malady sometimes exists at birth, but more frequently the first indications are observed from about the eighth month to the third year. It is preceded by a paleness and puffiness of the countenance, and a yellow, sulphur hue of the cheeks; the body at length emaciates, the flesh becomes flaccid, the lower limbs grow thin, while the head increases in bulk, the forehead becomes prominent, the spine bends, the belly is tumid, and the joints are loose and spongy. The mental faculties are usually clear, and often precocious. The causes of this disease are, "bad nursing, bad air, bad food, want of cleanliness and exercise."

2. **Cretinism.** — The essential differences between this disease and the preceding are, the tendency to goiter, or enlargement of the thyroid gland, and the small size of the brain, with thick skull bones, which characterize the present affection.

SYMPTOMS. — The bony derangement chiefly affects the head and

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neck; the body is stinted; the skin is wrinkled; the complexion is wan; the countenance is vacant and stupid; the cranium bulges out, particularly in the occipital region, while the crown and temples are depressed; the sensibility is blunted; all the mental faculties are feeble or idiotic; the moral affections seem to be wholly wanting; and a majority of the miserable sufferers are both deaf and dumb.

3. **Mollities Ossium.** — A general *flexibility* of the bony structure, formerly denominated *spina ventosa*, is commonly found in the early periods of life, as *fragility* or *brittleness* is peculiar to later age. Its immediate cause is, of course, deficient assimilation of osseous materials, but its more remote and more important cause must lie further back, in some derangement of the primary nutritive functions.

Symptoms. — A bending or crooking of the bones in different parts of the body, on slight exertion, with little or no pain.

4. **Fragilitas Ossium.** — In this affection the substance of the bones becomes so brittle that it is apt to break on slight exertions. The immediate cause is a deficiency of the materials of the gelatinous structure.

5. **Osthexy.** — This term imports an *ossific diathesis*, a bony habit of body. The disease consists in a superfluous secretion and deposit of ossific matter, by which the soft parts are more or less indurated or obstructed.

6. **Exostosis.** — Calculous or bony tumors may be seated immovably on a bone, or on the periosteum, or pendulously in a joint, or fixed or movable in some fleshy part of the body. These affections are generally sequelæ of gout, rheumatism, syphilis, etc., but sometimes appear in persons of ordinary, though, of course, not perfect health.

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CHAPTER XVII.

SENSATION.

THE diseases coming under the present heading are all symptomatic of nervous exhaustion, functional obstruction, malformation, or local accident or injury; and only when the primary morbid condition is obscure are they to be treated as idiopathic maladies. Enumerated below are all that require special notice: —

1. Headache.	5. Antipathy.	9. Morbid Hearing.
2. Neuralgia.	6. Vertigo.	10. Morbid Smell.
3. Sleeplessness.	7. Syncope.	11. Morbid Taste.
4. Restlessness.	8. Morbid Sight.	12. Morbid Touch.

1. **Cephalalgia** (HEADACHE). — The unbiassed and intelligent student, who will diligently labor through the various attempts which have been made by medical authors to define, describe, arrange, classify, expound, and medicate the single and seemingly simple subject of headache, will find enough of confusion confounded to convince him that a system as baseless as the fabric of a vision has engaged the minds of many medical philosophers, rather than a careful and correct observation and arrangement of the phenomena of truth, nature, and common sense. The ordinary and every-day causes of headache are, indigestible food, overloaded stomach, constipated bowels, torpid liver, inactive kidneys, obstructed skin, oppressed lungs, acidity, flatulence, violent passions, suppressed natural evacuations of all kinds, and their consequences, thick blood, irregular circulation, etc., to which may be added the direct effect of stimulating drinks or nervines, or their sudden withdrawal after the system has been accustomed to their use. And the pain of headache will be *acute*, *chronic*, *periodic*, *throbbing*, *local*, or *general*, etc., according to a multitude of circumstances which bear upon each individual case.

2. **Neuralgia.** — Neuralgia is another of those diseases which are among the growing evils of the increasingly enervating customs of civilized society. Until a very modern date, the only form of this disease known to medical men was the *tic douloureux*, or neuralgia of the face; now, however, neuralgic pains, in almost all

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parts of the body, are very common afflictions. The face, jaws, feet, and breast are, however, most frequently the parts affected.

Symptoms. — The disease is recognized by acute lancinating pains along the course of one or more nervous branches of the organ or part affected, which recur in short paroxysms, with irregular intervals; usually there is more or less twitching or irregular convulsive motion of the adjoining muscles. In facial neuralgia the pain shoots from the region of the mouth to the eyes, ears, cheek, palate, fauces, and teeth; sound teeth have sometimes been extracted, on the supposition that some concealed ulcer or caries occasioned the pain. When the foot is attacked, there are racking pains about the heel, darting toward the ankle and bones of the tarsus. In nerve-ache of the breast, the sharp, darting pains usually divaricate from a fixed point in the breast, and shoot down the course of the ribs and arm to the elbow. When other parts, organs, or particular muscles are attacked, the disease is easily recognized by the sharp, darting, cutting, and intermitting character of the pain.

3. **Sleeplessness.** — This affection, which is characterized by a difficulty or inability of sleeping, is, when not symptomatic, produced by some mental excitement or bodily disquiet. In the former case the mind is listless to surrounding objects; and in the latter, the attention is alive to them. Severe study, intense attention to business, and protracted watching, are common causes of the former variety; and cold feet, eating near bedtime, taking stimuluting drink in the evening when unaccustomed to it, or abstaining after having been habituated to it, are the ordinary causes of the latter.

4. **Restlessness.** — There are two states of general bodily disquietude, which authors have regarded as distinct diseases. One is familiarly called *fidgets*, and distinguished by a perpetual desire to change the bodily position; and the other, called *anxiety*, is known by an equally restless desire of perpetual locomotion. The common cause of the fidgety variety is too long confinement of the whole body, or any part of it, in a nearly motionless position. Children at school, writers at the desk, females with the needle, especially those of active brains and irritable temperament, often suffer severely for want of free and frequent exercise of the whole muscular system. Worms and some kinds of skin diseases sometimes produce this complaint.

5. **Antipathy.** — A feeling of internal repugnance, or horror, at the presence of particular objects, or the introduction of particular subjects, constitutes one of the many singular infirmities of

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our fallen nature. Some persons will sicken at the sight or taste of butter or cheese; some find the smell of roses and mint, or the sound of music, painfully disagreeable; some will detect the presence of a cat in the room without the use of the external senses; some are ready to faint at the sight of blood, wounds, sores, crabs, lobsters, toads, vipers, and other unsightly animals; and some will scream frightfully at the appearance of a mouse or spider. These peculiar traits of idiosyncrasy may be produced by frights or other accidents in early life, or by some powerful and perhaps forgotten mental impression of the mother during the period of gestation.

6. **Vertigo.** — Different forms of vertigo are known by the terms *dizziness, swimming of the head, blind headache,* and *nervous fainting-fit;* it is a frequent accompaniment of headache, and is owing to the same exciting and predisponent causes.

Symptoms. — The patient while at rest experiences an illusory gyration, or objects around him seem affected with a whirling motion; there is also a sense or fear of falling, with some degree of mental confusion. In some instances the dizziness is combined with illusory sounds, as whispering, murmuring, ringing of bells, beating of drums, roar of cannon, etc.

The immediate cause or proximate condition is a preternatural pressure of blood upon the nervous substance of the brain; and this is owing, in most cases, to a morbid viscidity of the blood, from retained bile, perspirable matter, or other effete material.

Extreme debility, whether from hard labor, starvation, hemorrhage, or protracted diseases, favors the condition of the brain from which vertigo results, for the reason that the action of the heart being weakened, and the capillaries contracted or paralyzed, the blood is pressed with disproportionate force upon the brain. The exciting causes are usually sudden exertion or hurried motion, as raising the head, stooping, etc.

7. **Syncope.** — *Swooning* and *fainting-fit* are the principal varieties of the malady before us, which is distinguished by diminished sensibility, inability of utterance, with feeble or imperfect motion of the heart and lungs. The general causes are the same as those of the preceding disease, although to the exciting causes may be added extreme pain, violent passions, sympathy, sudden fright, sudden abstraction of blood, rapid evacuation of fluid accumulated in the cavities of the body, as in dropsy, sudden discharge of the matter of extensive abscesses, retrocession of arthritic and eruptive diseases, excessive fatigue, etc.

8. **Morbid Sight.** — Ingenious nosologists have a list of

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nearly six hundred diseases of the eye. The list has since been reduced to *twelve;* but I think *one* will answer just as well for all the forms of depraved vision which do not properly belong to the special chapter on diseases of the eye.

SYMPTOMS. — In *false sight* or *illusory vision* — the only species coming within our generic definition — imaginary objects float before the eye, or real objects appear with imaginary qualities, constituting the *ocular specters* and the *muscæ volitantes* of authors. In many cases of false sight, objects appear of unusually large or small sizes, or multiplied in number; one color is mistaken for another; sparks and flashes of light appear before the eyes, etc. Excess of light, plethora, local injuries, as blows, bruises, congenital malformations, are the causes.

9. **Morbid Hearing.** — Preternatural acuteness or obtuseness, or disordered perception of sound, results from a variety of inflammatory states or structural changes of the ear. But in some instances the hearing has been so keen as to render the ordinary whispering, and even the respiration of persons present, highly distressing, and to render real, imaginary, or illusory noises exceedingly troublesome, or so dull as to disable the patient from taking part in common conversation, without any apparent local affection of the auditory apparatus; although in most cases it is presumable that a deficiency of the ceruminous secretion, or an unnatural irritability or torpor, resulting from powerful noises, violent passions, etc., are the conditions on which the depravity of the function depends. In some cases of semi-paresis, or partial palsy of the auditory nerve, the ear is only sensible of articulate sounds when excited by louder sounds intermixed with them; and in some cases particular sounds, as the beating of a drum, the rattling of carriage wheels, the tones of a shrill pipe, the ringing of bells, etc., will excite the function, and enable ordinary conversation to be recognized.

10. **Morbid Smell.** — Acrid, obtuse, and absence of smell, are, like analogous conditions of the other senses, usually among the symptoms of fevers and local affections. But with some an extreme and painful keenness or total deprivation of the sense exists from birth. Some persons find the smell of roses, and various odors and perfumes which are agreeable to the majority, intolerably offensive and sickening. A temporary loss of smell may result from a slight cold; and a permanent depravation or deprivation of the sense is often produced by irritants, pungents, errhines, and poisonous vapors, as "cephalic snuffs," tobacco dust, cigar smoke, etc.

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Catarrhal affections, when long continued, always deteriorate the sense; and all high-seasoned dishes, and complicated preparations of animal food, are especially injurious.

11. **Morbid Taste.** — The tongue and palate, which in the normal state distinguish the chemical and gustatory qualities of substances, as sour, sweet, bitter, rough, aromatic, saline, etc., are sometimes so malformed originally, or so perverted by disease or bad dietetic habits, as to be painfully acute or morbidly obtuse.

12. **Morbid Touch.** — The hand, and especially the extremities of the fingers, possess the nicest power of discriminating the tangible properties of bodies, although the whole skin belongs to the organ of feeling, or sense of touch; and this sense, like all the others, may be preternaturally acute, or insensible, or illusory. Its principal deviations from the normal condition are known as *soreness*, *itching*, *heat*, and *coldness*. The first variety is usually the result of a cold, or a symptom of fever or inflammation; the second is dependent on irritation in the stomach, bile in the blood, or imperfect depuration from the skin; and the third and fourth are caused by exercise, and alternations of, or exposure to, extreme temperature.

CHAPTER XVIII.

THE MIND.

The majority of cases of insanity, lunacy, hallucination, or mental aberration, have their origin in bodily disease. Yet there are cases in which the producing cause is wholly mental. The present chapter comprises, —

1. Insanity.
2. Ungovernable Passion.
3. Hallucination.
4. Revery.
5. Sleep Disturbance.
6. Fatuity.

1. **Insanity.** — Nothing in the whole range of pathology is more difficult than a nosological arrangement of the abnormal states of mind; for the vast diversity of human intellect, and the varied circumstances of excitement, depression, and misdirection to which it is subjected by individual and social uses and abuses, make it sometimes impossible to say where sanity ends and insanity begins; while among the unquestionably insane we find every conceivable shade and degree of mental peculiarity, from a disproportionate

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activity of a single faculty or propensity, constituting a *one-ideaism* or an *all-absorbing passion*, whose possessor is merely a *monomaniac*, to the most violent and extreme derangement of several or of all the mental powers, constituting craziness, lunacy, or idiocy.

The malady before us presents two distinct features, which authors have ranked as species of disease: *melancholy*, in which there is a total or partial hallucination, accompanied with extreme dejection, fear, and false apprehensions, while the will is wayward and domineering, and *mania* or *madness*, in which all the mental powers are greatly excited, and the discrepance between perception and judgment general. Melancholy is subdivided into many varieties, as *gloomy melancholy*, when the patient is mute and retiring; *erratic*, when he is roving and restless; *malevolent*, when he is morose or mischievous, and disposed to injure himself or others; and *complacent*, when he is quiet, affable, and visionary Madness is characterized as *furious*, when the patient is violent, runs, jumps, mutters, cries, shrieks, etc.; *elevated*, when he is gay, lively, hurried, exulting in his own imaginary importance, which may make him a president, king, prophet, or the Messiah; *despondent*, when he is abjected and depressed; and *demented* or *chaotic*, when the mind sinks into insensibility and forgetfulness, with an entire abolition of the faculty of judgment, yet possessed of unconnected and evanescent emotions, and perpetually active in acts of extravagance without object or design.

That the phenomena of insanity immediately depend on some excess or defect, or mal-distribution of nervous influence, is sufficiently obvious; nor is it difficult to ascertain the ordinary, remote, or disturbing causes; these are generally strong mental emotions, operating in connection with an organism physiologically unsound. Intemperance is *the* most frequent cause. Gluttony, self-abuse, powerful stimulants, religious excitement, grief, fear, disappointment in objects of love, ambition, or property, reverse of fortune, etc., are named by authors among the ordinary causes.

2. **Ungovernable Passion.** — This affection, in which the judgment is overpowered by some predominant or ruling passion, accompanied with a marked change of the features and countenance, is seen under the forms of *excited*, *depressed*, and *fitful* or *eccentric* passion. The divisions of the first are innumerable, as *ungovernable joy*, *self-love* or *self-conceit*, *pride*, *ambition*, *anger*, *jealousy*, etc., all of which are marked by a lively, quick, daring eye, and a flushed, tumid face.

3. **Hallucination** (Illusion). — In this affection the

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imagination overpowers the judgment. It embraces two varieties, one of which is called *sentimentalism*, or *mental extravagance;* and the other is termed *hypochondriacism*, or *low spirits*. The former is characterized by romantic or fantastic ideas of real life, ardent fancy, excited and pleasurable feelings, and animated countenance; it embraces those forms of mental illusion, called *heroic* or *chivalrous*, *facetious*, *ecstatic*, and *fanatic;* in other words, *romantic gallantry*, *crack-brained wit*, *false inspiration*, and *fanaticism*. The *hypochondriac* variety is distinguished by gloomy ideas of real life, dejected spirits, anxiety, indisposition to exercise, an oblique and scowling eye, sad and sullen countenance, with a languid pulse, and prominent dyspeptic symptoms; it comprehends the mental states known as *vapors*, *weariness of life*, and *misanthropy* or *spleen*.

Some authors name displacement of the transverse colon as a cause of various forms of insanity; and the French pathologists are said to have frequently found this condition to exist, on post-orbit dissections, more especially in subjects who have died of the varieties of hallucination called *weariness of life* and *misanthropy*.

I have noticed another still more frequent cause of still severer forms of "a mind diseased." I mean displacement of the uterus. The reasons already assigned show us why this malady should be of frequent occurrence among females. They are more sedentary, and in-door in their habits and occupations, and hence more liable to constipation, piles, prolapsed bowels, etc., and the general debility and relaxation of fiber often extends to the uterus and its appendages, producing prolapsus, anteversion, retroversion, and a variety of other local complaints. These cases require special treatment, which will be mentioned hereafter.

4. **Revery.**—*Absence of mind*, *mental abstraction*, and *brown study* are the usual forms in which the misaffection of mind, termed revery, is exhibited. They are sometimes induced by bodily infirmity, but are more frequently the acquired habits, resulting from a loose, irregular, and superficial education—an education in which the mind is stuffed with words instead of being taught to think and form ideas for itself. This, combined with corporeal inactivity or indolence, is the principal reason why so many college-bred sons of distinguished men, after receiving the highest finish of a *formal* education, and being "put through" a learned profession—law, physic, or divinity—in the offices of the most eminent professors, turn out wordy blockheads or professional automatons, instead of thinking men and intelligent citizens. These remarks apply mainly to the first variety of revery.

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It should be remarked, however, that some overwhelming passion, and intense study, especially upon the principles of mathematics, and other abstruse subjects, are not unfrequently causes of mental abstraction, while these causes, coupled with the pursuit of some object of ambition, or emulation, in which the mind is kept for some time in a state of distraction between hope and fear, frequently induce the variety called brown study.

5. **Sleep Disturbance.** — *Sleep-walking*, *somnambulism*, and *sleep-talking* are terms which denote the forms, and sufficiently express the nature of the chief varieties of mental disorder connected with sleep. There is, in all cases, an imperfect and disquiet rest, in which some of the mental powers are but partially asleep. The usual, and perhaps only causes, are an irritated or overloaded stomach, and an over-excited brain. Profound or natural sleep is never accompanied with walking, talking, or even dreaming; hence all the phenomena resulting from disturbed sleep are so many symptoms of abnormal bodily or mental irritation. Worms in the alimentary canal, and diseases of the brain, are peculiarly distinguished by somnambulific manifestations.

6. **Fatuity.** — That form of mental hebetude which is known as *imbecility*, is divided by authors into various forms, the chief of which are *stupidity*, *forgetfulness*, *credulity*, and *feebleness*; while *irrationality* or *witlessness* comprehends those manifestations of defective reasoning faculties we call *folly* or *silliness*, *dotage* or *superannuation*, and *idiotism*. Of course we must all humbly and modestly confess to some degree of some one or more of these "hebetudes;" but it is only when they are found to form a very prominent feature of a very small minority, that we are to name them as leaves or branches of the great *arbor morborum*.

Stupidity may arise from ignorance, from gross food or gluttony, from idleness, from intoxicating drink, from tobacco, etc. Idleness, in conjunction with wine and fermented liquors, has a proverbial power in besotting the understanding. Forgetfulness affords many curious examples of oblivious reminiscence. Some forget the place or street they live in; others can not always pronounce their own name at the post-office; and instances are recorded in which individuals have forgotten their mother tongue, and been obliged to re-learn the language from the alphabet. Credulity may result from misdirection or original malformation; and it exhibits all degrees of imbecility, from a trifling gullibility to a disposition to take hold of subjects with a fervency of faith proportioned to their in-

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trinsic absurdity. Silliness is sometimes a natural infirmity, and frequently the fruit of bad company, and low associates in early life. Dotage is usually considered as a mere consequence of old age, but is generally hastened on and aggravated by riotous living or excessive labor, or the habitual indulgence of violent passions. Idiotism generally results from defective organization, or a want of that portion of the brain which manifests the reflective faculties. It may, however, be induced by a variety of accidental circumstances or voluntary habits, as habitual drunkenness, excessive indulgence in enervating pleasures, onanism or self-pollution, violent and protracted emotions of mind, external injury of the brain, loss of blood, etc.

CHAPTER XIX.

VOICE AND SPEECH.

The diseases which make up the present chapter, have for their prominent symptoms, some misaffection of the voice, or speech; a few differ greatly in every other particular. They are classed, —

1. Catarrh.
2. Polypus.
3. Rhonchus.
4. Speechlessness.
5. Dissonant Voice.
6. Dissonant Speech.

1. **Catarrh.** — When this affection is confined to that part of the mucous membrane which lines the nasal cavities, it is called *cold in the head;* and when the inflammation fixes permanently upon the same membrane in the cavities of the frontal bones, it is called *catarrh in the head.*

Symptoms. — In the *acute* form there is a defluxion of acrid, pellucid, mucous, or ropy matter from the nostrils, with a sense of irritation, and some degree of general fever. In the *chronic* variety the discharge is limpid, without acrimony or irritation, and unattended with febrile disturbance. The third variety, which is produced by an *ozena*, or nasal ulcer, is denoted by an offensive, purulent, or ichorous defluxion; it is often connected with caries of the spongy bones. Sudden exposures to cold and damp, hot drinks, irritant dust, or vapors, snuff, smelling-salts, strong aromatics, mercurial salivation, etc., often induce this disease.

2. **Polypus.** — Polypous tumors in the nostrils are of two

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kinds; the *soft* or *compressible*, and the *hard* or cartilaginous. Both are probably morbid growths of the mucous membrane, although the latter variety is generally connected with caries of the ethmoid or inferior turbinated bones.

SYMPTOMS.—Nasal polypi present the appearance of fleshy, elongated excrescences, attached by a slender neck to some part of the Schneiderian membrane, extending in different directions, and affecting the speech by obstructing the nasal cavities. The soft kind is unattended with pain; its color is a pale red, having some resemblance to a common oyster; and it generally shrivels in dry and enlarges in wet weather. The hard polypus is firm, of a highly red or dark color, progresses gradually without alternate diminution and enlargement, and causes pain, with a very disagreeable sensation in the nostril and forehead, on coughing, sneezing, blowing the nose, etc.

3. **Ronchus** (RATTLING IN THE THROAT).—*Snoring* and *wheezing*, which are the chief varieties of this affection, are symptomatic of other diseases, as apoplexy and asthma, or of gross feeding, a plethoric habit, corpulency or obesity, or of an obstructed skin, by which the lungs are oppressed with vicarious duty, or of atony or debility of the abdominal muscles, which are important agents in the respiratory movements.

4. **Speechlessness** (DUMBNESS).—Inability of speech may result from destitution of tongue,—and this may be congenital or accidental,—constituting the *elingual* variety; or from paralysis of the nerves of the tongue or glottis, in consequence of some violent injury or shock, forming the *atonic* variety; or from congenital deafness, or deafness acquired in early life, making the variety called *deaf-dumbness*.

When the inability is not organic, its most frequent causes are severe and protracted colds; violent shocks, as of lightning or electricity; vehement emotions, as of terror, anger, fright; narcotics; mephitic exhalations; poisoning from eating mushrooms, and sometimes shell-fish; metallic vapors; mercurial medicines, etc. There are also many cases of partial or complete loss of voice, the cause of which is almost always overlooked or unthought of by the attending physician: I mean cases of weak voice resulting from mere debility of the muscles of the loins and abdomen.

5. **Dissonant Voice.**—The chief depravations of voice have been ranked under the heads of *whispering*, in which the voice is weak and scarcely audible; *immelodious*, when it is habitually rough, nasal, squeaking, whizzing, guttural, or palatine; and

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the irregularly alternating harsh and shrill voice, which is peculiar to the period of *puberty*.

The last named variety can hardly be regarded as a disease, save when complicated with some accidental abnormity. The other varieties are caused by most of the circumstances which produce the atonic loss of voice, to which may be added over-exerting the vocal apparatus, as in loud speaking or singing, or in straining the voice while the bodily attitude is crooked or distorted, or when the abdominal muscles are so weakened that the main effort at expulsion is thrown upon the muscles of the throat, chest, and diaphragm.

6. **Dissonant Speech.** — *Stammering* has been called a sort of St. Vitus's dance of the vocal organs. Its principal varieties are called *hesitating*, in which there is an involuntary and tremulous retardation in the articulation of peculiar syllables; and *stuttering*, which is an involuntary re-pronunciation of some syllables or words, alternating with a hurried and convulsive pronunciation of those which follow.

Misenunciation is that form of imperfect speech in which the sounds are articulated freely, but inaccurately pronounced; the principal varieties of this affection are vicious or incorrect pronunciation of the letters *r* and *l*; substitution of soft for harsher letters; multiplication or omission of labials, or exchanging them for other letters; misemployment of dentals, and mispronunciation of gutturals.

All of these errors and imperfections of voice are sometimes the result of organic malconformation; occasionally, as in the case of stammering, of a constitutional irritability of some of the muscles concerned in articulation; more frequently of a want of correct education; and still oftener of a careless or depraved habit; and even in some cases of an exceedingly silly affectation. Many stammerers who talk with great difficulty, read with great facility, and all of them stammer most when they undertake to speak most deliberately, and least when their attention is so engrossed with the subject that they think nothing about picking out single words, or arranging sentences with a view of obviating the infirmity of speech.

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CHAPTER XX.

THE SEXUAL SYSTEM.

WITHOUT doubt this is the MOST IMPORTANT subject, to many, in our collection, and should receive the EARNEST attention of every reader, be he young or old.

The "Address to the Public," in this chapter, is a subject which underlies the very foundation of our existence, and can not be lightly passed over. We arrange below, —

1. Mismenstruation.
2. Leucorrhea.
3. All Venereal Diseases.
4. Inordinate Lust.
5. Genital Displacements.
6. Spermatorrhea — Self-Abuse.

The integrity of the function whose morbid affections we are about to consider, in its importance to the progressive improvement and well-being of the human race, can not be over-estimated; yet, unfortunately, with regard to several diseases comprised in the present chapter, we have to regret, as in the case of several preceding maladies, that they are alarmingly on the increase. This is especially the fact in regard to those female diseases known as mismenstruation and prolapsus — diseases of rare occurrence in the days of our grandmothers, and then scarcely known, except in the married relation, but now prevalent among all classes and all ages of females above mere infancy. These complaints are attributable to four general classes of causes — sedentary habits, concentrated and stimulating food, enervating drinks, and unphysiological dress; and as the refinements, and luxuries, and bad fashions of society increase, these natural and necessary consequences must extend correspondingly.

It is a painful reflection, too, on the popular medical system of the day, that its professors, who claim to be the conservators of the public health, content themselves with dosing and drugging, bleeding and poisoning, and talking technicalities to this class of invalids, instead of teaching them how to live healthfully. Soundness and purity in the reproductive organism are indispensable to a perfect and vigorous organization in the offspring of sexual intercourse; and if mothers and daughters could be imbued with the right moral

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principles and physiological truths, there would soon be an end to these artificially produced, but not the less afflictive and lamentable, disorders.

1. **Mismenstruation.** — The catamenia secretion may be obstructed in its discharge, laborious and painful at the usual period, excessive in quantity, vicarious in its locality, irregular in its final cessation, or attended with general derangement of health at the period of its first appearance, which several circumstances constitute the several species of the disease before us.

Symptoms. — *Obstructed* menstruation — the *amenorrhea* of authors — is distinguished into *retention*, when the menstrual flux is obstructed at the period of its accession, and *suppression*, when the obstruction occurs regularly at the usual periods of recurrence. The former variety is characterized by an edematous swelling of the feet and ankles at night, and a swelling of the eyes and face in the morning; the latter is attended with headache, difficult breathing, and palpitation. Both varieties are attended with general languor and many dyspeptic symptoms, particularly a capricious appetite, and not unfrequently a longing for innutrient and injurious substances, as clay, slate-stone, charcoal, etc. In many cases there is a harassing cough, with symptoms of a general decline.

In *laborious* or *painful* menstruation — *dysmenorrhea* — the flux is accompanied with great and sometimes excruciating pain, not unlike the bearing-down pain of labor, generally attended with some degree of actual hemorrhage, and frequently with an expulsion of fragments of a membranous concretion, like that of croup or tubular diarrhea. In some instances this membranous concretion is thrown off from the entire surface of the uterus at once, in the shape of a small bag filled with a fluid which has been mistaken for an early abortion.

In *excessive* menstruation the catamenial secretion is superfluous in quantity, and attended with an actual hemorrhage from the menstrual vessels. The hemorrhage is known by the fact that the fluid discharged is coagulable, which is not the case with the pure catamenial flux. It exhibits two sub-varieties, in one of which the discharge is excessive from too frequent recurrence, and in the other from too copious a flow at the proper menstrual period. The ordinary flux may be from four to six ounces; but it is subject to much diversity, and can only be regarded as morbidly in excess when accompanied with marked symptoms of general debility, as paleness, cold extremities, edematous feet, fatigue on slight exercise, etc.

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Vicarious menstruation is characterized by a transfer of the catamenial secretion to a more distant part or organ. The eyes, nostrils, ears, sockets of the teeth, nipples, stomach, lungs, rectum, bladder, and abraded or ulcerated surfaces, have been the seat of the transferred flux.

The *irregular cessation* of the menses, at the term of its natural cessation, — usually called the *turn of life*, — which, in this climate, is, on the average, at about the forty-fifth year, is accompanied with symptoms of spurious pregnancy, dropsy, or glandular tumors; the menstrual discharge is irregular; sometimes profuse, with long intervals; and at others trifling in quantity, but returning every ten or twelve days, and often succeeded by leucorrhea.

Chlorosis, or *green-sickness*, though elevated to the rank of a generic term by some authors, is merely a condition of imperfect or deficient menstruation, occurring about the age of puberty, and complicated with so great general debility that the sexual power or propensity is partially or completely lost. The name is derived from the pale, livid, and greenish cast of the skin, which all chlorotic patients manifest more or less.

In addition to the general causes already intimated, mismenstruation may be induced by repeated colds, especially from an exposure of the feet while the rest of the body is well clad, protracted anxiety, grief or fear, local injury, masturbation, excessive venereal indulgence, repeated miscarriages, etc. Retention of the menses is sometimes owing to an imperforate hymen.

2. **Leucorrhea.** — This disease is indiscriminately called *fluor albus* and *whites* in medical books. It affects more or less nearly all females who are the subjects of mismenstruation, and sometimes exists antecedently, and at others subsequently, to the menstrual period of life. It is most frequently the immediate result of local irritation. It has been for a long time, and is yet, a question among medical authors, whether this disease is ever infectious, and communicable to the male urethra by the act of copulation. Two years ago, a "professor of diseases of women and children," in one of our city colleges, and an ex-professor of the same branch in another orthodox school, were called upon, in a court of justice, to give testimony on this very point. The latter professor testified that he had actually known such infection to result from leucorrhea, in his own emphatic language, "again, and again, and again;" while the former declared that he did not believe it was possible! Both medical gentlemen, of course, swore conscientiously. It is a general law in pathology — so general that I believe there are no

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exceptions — that all abnormal secretions are bland or acrid precisely according to the less or greater grossness, or impurity, or inflammatory condition of the general system; all morbid discharges from mucous surfaces may become, as is often seen in the case of catarrh or coryza, so acrimonious as to excoriate the surface wherever they come in contact with it; and the mucous surface of the vagina may readily, under circumstances of extreme irritation and high inflammatory excitement, secrete an ichorous or infectious matter, which will produce in the male urethra a running analogous to gonorrhea or gleet, though, of course, not as violent nor inflammatory as in true gonorrhea, nor infectious like it. I have known cases of this kind under such circumstances as precluded all idea of impropriety on the part of the wife, by whom the husband became diseased. These facts ought to be well understood by the practitioner, so that the woman, though she may not be an example of strict personal cleanliness, may be exempted from the charge of moral impurity.

Symptoms. — The discharge is usually of a yellowish-white color, verging to green; but sometimes it is brownish, or slightly red, varying in consistence from a thin, limpid fluid to a thick, tenacious, ropy mucus. It is usually accompanied with weakness or pain in the back, and some degree of "spinal irritation;" when of long standing, it is attended with a sense of heat, and itching or smarting; and in still more advanced stages, the discharge is highly acrid and offensive, often excoriating the whole surface of the vagina.

In the form called labor, the discharge is slimy and tinged with show of blood, and is only regarded as morbid when excessive. The whites of advanced life generally appear soon after the cessation of the menses; the discharge is thin, acrid, fetid, and excoriating, and is sometimes combined with incipient cancer or polypus.

The same general range of morbid influences which predispose to, or excite, mismenstruation contribute to the production of leucorrhea, to which may be added mechanical injuries and irritations, as pessaries, repelled eruptions, voluptuous excitement, and uncleanliness.

The diseases peculiar to women are so many, of so frequent occurrence, and of such severity, that half the time of the medical profession is devoted to their care, and more than half its revenues depend upon them. We have libraries of books upon them, special professorships in our medical colleges, and hosts of doctors, who

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give them their exclusive attention. We have quack nostrums without number, and instruments of the most curious and complicated construction. We have, moreover, needless and shameless examinations with finger and speculum, and libidinous manipulations, to which women and even young girls are subjected, of the most infamous character. Diseased women go to these doctors, and pay hundreds of dollars to be felt of, looked into, cauterized, or anointed, when it is all sheer, base, mercenary quackery, or worse. One old wretch in the vicinity of New York has followed this trade for years, and accumulated a fortune. Ladies of the "highest respectability" have been through his hands. Day after day there might be seen a long line of carriages before his door, and his parlors were filled with women and girls waiting their turns. I have known of a woman affected with nymphomania, which he had either occasioned or increased, going to him in the night, getting on her knees, and offering him any sum to perform his accustomed manipulations. I have known a mother to take her virgin daughter to him, and to find, with horror, that she had subjected her to the beastly pollution of an old lecher.

I do not say that all doctors who make female diseases a speciality are alike infamous in their motives and practices. Many are well-meaning, ignorant men; many are merely mercenary. Nearly all do mischief. The result of all the attention paid to this subject, all the medicines and instruments, is, that never were diseases of this class so common, or so incurable in the common practice, as at the present time. The books and professors are all at fault. They have no knowledge of the causes or nature of these diseases, and no idea of their proper treatment. Women are everywhere shamefully outraged and abused. Civilization is a car of Juggernaut, which crushes millions of victims; but none suffer as women suffer. When the full chapter of woman's wrongs and sufferings is written, the world will stare aghast with horror at the hideous spectacle, and we shall be ashamed of the petty subjects of our present fashionable philanthropies.

I know that I am touching now on delicate ground. I know how much women think of their doctors. Poor woman of civilization, with your oppressions and diseases, you have at least two comforts —your minister and your doctor. And you will not be too hard on me for telling you some truth; for you will say, "Whatever other ministers and other doctors may be, mine are different!"

Very well. It is not my business to take from you any source of

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consolation. It is simply my duty to tell you the truth about the nature and cause of your diseases, and how they may be prevented and cured.

3. **Venereal Diseases.** — The affections of the genital organs which result from impure sexual intercourse are among the most loathsome in appearance, and the most deplorable in their consequences, that afflict degraded and erring mortals.

Symptoms. — Venereal affections appear in two distinct forms, *syphilis*, or *pox*, and *gonorrhea*, or *clap*. The first is a constitutional disease, or rather, may become so; the second is always a local disease, never extending beyond the genital organs or glands of the groin. Both diseases, however, may coexist in the same individual, and be communicated at the same time. *Gleet* is simply a urethral running; and, though often a sequel of gonorrhea, may exist from irritation unconnected with venereal taint, and be excited by stone in the bladder, leucorrhea, and various other causes. These distinctions are important to keep in mind, for thousands have their constitutions ruined by a long mercurial course for gonorrhea, on the mistaken notion that the disease was in the blood or general system. It should be remarked, too, that syphilis never affects the constitution until after the formation of an ulcer, and the absorption of its matter.

Syphilis commences with one or several small pimples, or *chancres*, on some part of the genitals, which gradually fester, and finally terminate in spreading or deepening ulcers, filled with an exceedingly acrid and corroding matter. If this matter is allowed to be absorbed, the glands of the groin swell into hard tumors, called buboes, and often ulcerate. Eventually the whole body becomes contaminated with the virus absorbed from the chancres, and what are called *constitutional* or secondary symptoms appear, as foul ulcers in the throat and palate, livid and copper-colored spots on the skin, or ulcerating scabs, inflamed eyes, pains, swellings, and caries of the bones, etc.

Gonorrhea (*blennorrhea luodes*) consists in a muculent and virulent discharge from the urethra or vagina, attended with a burning pain in passing the water, and considerable, sometimes violent pain, heat, and swelling of the part affected; in some instances the inflammation extends to the glands of the groin, producing buboes.

Venereal diseases may be generated by promiscuous sexual intercourse, and when produced, the peculiar virus thus developed is capable of propagating the same disease by contact.

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4. **Inordinate Lust.** — We need not dwell long on this affection. Authors have applied the term *satyriasis* to an ungovernable sexual passion in the male, and the term *nymphomania* to a similar propensity in the female. They are both produced by some local irritation, which may have its origin in the general mental or physiological habits of the individual. The most frequent combination of causes which operate to produce a state of lascivious *furor* is, gross, high-seasoned food, intoxicating drinks, indolence, and personal uncleanliness — in other words, inattention to bathing.

These views of the causation of the disease are supported by the fact that it is more common in advanced life, even beyond the "three score and ten" period, than in youth or middle age.

5. **Genital Displacements.** — The true pathology or proximate condition of these affections is but little understood by the medical profession, as is apparent from the general ill-success attending the ordinary treatment. The term *prolapsus* is used indiscriminately for all degrees of simple descent, or *falling of the womb;* but in some books the term *relaxation* is applied when the descent is only to the middle of the vagina; *procidentia*, when the uterus descends to the labia; and *prolapsus*, when it protrudes externally. *Retroversion* is that form of displacement in which the fundus uteri descends toward the sacrum, the os uteri or mouth of the womb inclining toward the pubes. *Anteversion* is the reverse of the preceding, the fundus falling forward, and the os uteri inclining backward. In inversion the organ is turned inside out while in a state of prolapse. In some cases the upper part of the vagina protrudes into the lower, constituting what is called prolapsus of the vagina.

Symptoms. — *Prolapsus* of the uterus is attended with a heavy, disagreeable, or painful dragging-down sensation at the lower part of the abdomen, aching or weakness about the small of the back, and when severe, great difficulty or inability in walking. At first there is increased mucous secretion, which increases by degrees until it acquires the character of an obstinate leucorrhea.

When the uterus is *retroverted*, the bowels are irregular or constipated, and from the pressure of the displaced organ on the rectum behind and the urethra in front, there is more or less difficulty experienced in expelling the contents of the bowels and bladder. In this situation the womb often becomes congested, inflammatory, and enlarged, and every attempt at walking is exceedingly painful or exhausting. In bad cases the patient can only endure a fixed,

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quiet, almost motionless position in her chair or bed. There is, too, usually, considerable tenderness and tension of the whole abdomen.

Anteversion is a less frequent occurrence. It is denoted by difficulty in walking, sense of weight or fullness in the pelvis, with many of the symptoms of prolapsus, and is attended with much less difficulty in evacuating the urine and feces than retroversion.

Inversion is known by the organ hanging down externally. It is usually the result of violence in extracting the placenta, but may occur from an adhesion of the placenta, or from polypous tumors.

In some instances the falling down of the uterus or vagina drags along the bladder with it, constituting what is called *complicated prolapse*. In this case the bladder, being deprived of the expulsory aid of the abdominal muscles, is incapable of evacuating its contents without artificial assistance.

Genital excrescence consists in polypus or other tumors, issuing from the surface of the uterus or vagina. They are of all sizes, and of various degrees of consistence, from the softness of sponge to the firmness of leather.

Medical authors and professors of midwifery are continually talking about "relaxation of the ligaments" which hold the uterus in position, as the main cause of its displacement. It is quite clear that this relaxation has nothing whatever to do with it; the yielding or elongation of the ligament being itself an *effect* of the displacement. The natural supports of the uterus are the vagina and the abdominal muscles. If the former is greatly relaxed, the uterus will descend, and the ligaments, being kept constantly on the stretch, will finally elongate more or less; and if the abdominal muscles are greatly debilitated, they do not contract vigorously, so as to keep up equable and uniform compression in all the various positions of the body; hence the uterus is liable to fall forward or backward, or incline laterally; and when both are badly relaxed and debilitated, we find both conditions of displacement—falling down and tipping transversely across the pelvis. In corroboration of this view of the subject, I may advert to the fact, that all the cases of uterine displacement we meet with in practice, with the single and rare exception of such as are produced by violence, occur in females who suffer from the very circumstances which are most efficient in inducing muscular relaxation of these parts, as constipation, piles, dyspepsia, nervous debility, mismenstruation, abortions or miscarriages, preternatural labors, etc.

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AN ADDRESS TO THE PUBLIC.

6. **Spermatorrhea — Self-Pollution,** OR THE GRADUAL DECAY OF MANKIND. — The public have not the least conception of the vast amount of suffering entailed upon humanity by the practice of self-abuse. My readers, who will follow me, will be amazed at the sad effects of what they may have considered an innocent practice. Unfortunately for the history of human nature, it has been found coeval with every form of society, savage or civilized. It is a crime most monstrous, unnatural, and filthy, odious to extremity, and its consequences absolutely ruinous; destroying conjugal affection; perverting natural inclination; and extinguishing the hope of posterity. Increase and multiply is the Scriptural text, the perpetuation of the species being with the great Designer of the universe an object of the first interest. All living beings are mentally and physically formed with a view to this great end. With what encouragement to virtue, therefore, said an ancient author, may young people behold a man of the age of fourscore, with a wife of the like antiquity, both blessed with healthy, hale constitutions, and fresh, wholesome countenances, with sound minds and perfect senses, active limbs and cheerful tempers, presiding over a healthy progeny, perhaps to the third or fourth generation, and all of these blessings owing, under Providence, to their temperance and continence; when, if we turn our eyes upon licentious masturbators, we shall find them with meager jaws, pale looks, feeble hands, and legs without calves; their generative faculties weakened, if not destroyed, in the prime of their youth, a pest to others, and a torment to themselves. It is my wish that this publication may become extensively familiar to superintendents of schools, and to the clergy, to parents and guardians, and all to whom is intrusted the formation of youthful character. It will be useful in enabling them to make timely discovery of this hateful practice among those committed to their care, and it may put them on their guard, so as to enable them to take such precautions as may be most fitting to avert the consequences. There are few of those who have devoted themselves exclusively to the treatment of sexual diseases, who are not deeply impressed with the general prevalence of self-pollution, seminal, nightly emissions, with gleet, strictures, buboes, swelled testicles, suppression of urine, wasting away of testicles and penis, discharges from the urethra, etc.

Of the many misfortunes that afflict mankind, and degenerate the

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human race, that of "self-pollution" or masturbation is the greatest. Thousands of the most noble and gifted young men have gone down to an untimely grave, from the practice of this debasing and degrading habit. It is easy to know a person who is addicted to this deadly vice, merely from his looks. The evidences are unmistakable. They can not practice this evil without being known, for it defiles their minds, their consciences, and their appearances. Stop, then, unfortunate friend, for your deeds are known! Do you know, erring friend, that you are commanded in "Holy Writ" to glorify God in your bodies and spirits, which are His? St. Paul, in reference to the heathen, remarks, "Being given up to uncleanliness, they dishonor their own bodies." Friends and fellow-men, we will not be like the heathen. We will try to excel in all good works. St. Paul says, a little further on, "That it is the will of God that we abstain from all uncleanliness." And there are hundreds of other Scriptural passages of the same tenor. Reader, it is a good thing to observe and obey the will of God — for thus shall we be happy through life, as also will our disembodied spirits forever after be.

When the self-pollutor is clearly informed of the utter impossibility of his ever becoming the parent of a sound and vigorous offspring, surely he will forego the habit. All sexual excesses, of whatever kind, tend, unmistakably, to the production of a weakly and puny progeny — beings who will bring no honor to themselves or to mankind. Self-pollution destroys the nervous system; it deadens the brain; it creates melancholy, misanthropy, disgust, indifference, and several grades of madness, and often *insanity*. And is this to be wondered at, when we reflect that the vessels are, by an artificial stimulus, made to secrete the semen by a forced process, and for such unnatural purposes?

It is impossible for a self-pollutor to be a true lover. How can a man who is himself debased, truly love a noble, pure, and virtuous woman! The warm and passionate kiss — the exhilarating and delightful embrace, which two innocent and moral lovers feel — exist but in the diseased fancy of a self-pollutor. He can not love; he does not love himself. Instead of loving, he is continually trying to destroy his own physical existence. It is true that he is greatly inspired at the sight of a voluptuous woman; but this sort of love is purely sensual — a love that a common prostitute might inspire. God looks not down approvingly upon such love. This kind of love would seduce, and then abandon. But true, innocent, and virtuous love would never seduce, never abandon — never think of such a

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thing. When a virtuous man truly loves a woman, he could no more contemplate her seduction than he could think of taking his own life. We can not do violence to that which we truly love. The thing is utterly impossible!

But it is due to truth for me to say that the self-pollutor does not really contemplate the injury of any one. He longs for health, vigor, and manhood. He is the unconscious victim of a fatal spell!

The horrible consequences which attend self-pollution may be enumerated thus: Involuntary emissions, pains in the back and head, dimness of sight, and loss of memory and hearing; mucous discharges from the urethra; wasting away of the testicles, penis, etc.; decay of the back-bone; anguish, remorse, and tears; fatal wasting away of the flesh; the powers of the body gradually decay; at times aroused by frightful and horrible dreams, palpitations, faintings, coughs, slow fevers, and consumption; irksome and incessant uneasiness; thoughts of committing suicide; heat of urine and difficulty of voiding it; tumors upon the testicles, penis, bladder; incapability of cohabitation; absence of all pleasure when cohabiting; debility of the digestive organs; diseases of the intestines, liver, and spleen; discharge of fetid matter from the fundament; general debility of the whole system, etc. These are some of the symptoms of this vile practice of self-pollution or masturbation. But to continue: for the hundredth part of the evil effects of this habit never can be told. To him who has not reformed, the continuation will, I do believe, adhere to the immortal spirit when divorced from its material and physical companion.

Self-pollution, or masturbation, as it is called, as I have said before, is a cause of involuntary emissions, and is very prevalent among boys and young men. To some extent, it prevails among bachelors and widowers. It is terrific, when viewed in the light of its prostrating influences. It kills the body, and ruins the soul for usefulness and manly purposes. It is not confined to males, though much more common among them than females. It kills men quicker than women, other things being equal, from reasons which will readily appear obvious to the mind of every intelligent reader. Innocent, pure, sublime, sensual delights, the imagination of the self-pollutor knows not! He dwells everlastingly in the inner courts of the sensual. As a necessary consequence the intellectual and the moral in him grows faint. It makes him voracious in appetite, though wasting away in flesh, thus exhibiting the paradox of gluttonous eating and skeleton appearance! It creates a thirst for

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which water has no quenching power. It predisposes the organism to take on disease in many cases, where otherwise the body would resist successfully, and thus furnishes a clew to a class of ailments which perfectly confound the parent, and puzzle the physician who is not familiar with its results. Hundreds of parents spend hundreds of dollars in payment of physicians' bills, and receive no equivalent, in the improvement of their sick sons, simply because their sons are self-pollutors, and neither they nor the physicians know it. Look at the list, legitimately the product of this practice: Heat of the scalp, pain in the temples, neuralgia, early baldness, which, unless it is hereditarily transmitted, I regard as an unmistakable sign, for it affects both sexes alike. Dull pain in the cerebellum, partial deafness, catarrh in the head, nasal passages; soreness of the throat, pain between the shoulders, darting through the lungs — consumption caused by this and excessive married and sexual intercouse more than all other causes put together. Palpitation of the heart, enlargement of the heart, dyspepsia, arising from inflammation of the mucous lining of the stomach, or from irritation of the organic nerves, attended with dull headache in the forehead above the eyes, when this is the case; liver complaint, decay of the back-bone, paralysis of the bladder, irritation of the urethra, enlargement of the prostate gland, impotence when awake, and priapism when asleep, with nocturnal emissions, and slow but fatal wasting away of the flesh. Unite to these diseases of the body, the morbid condition of the soul, which I have sketched. Do you wonder that human beings die? Does it surprise you that depravity exists, and that while doctors keep silence, and ministers remain profoundly ignorant — the redemptive means which the church and society use, should be, to a great extent, a failure?

But when one comes to add to the pressure which these diseases make on the vital energies, the remedies which the faculty use, it becomes more surprising that any sufferer lives. For heat of the scalp they will prescribe a cathartic; pain in the temples, a blue pill; baldness, brandy and sweet oil; pain in the cerebellum, blisters; partial deafness and blindness, prussic acid; soreness of the throat, lunar caustic; pain between the shoulders, scarification and cupping; consumption, everything; enlargement of the heart, usually not anything; dyspepsia, gum guaiac and brandy; liver complaint, calomel; decay of the back-bone, the actual cautery, etc.

One who practices masturbation never reaches the highest exercises of the generative function, till he has so far become depraved that emissions take place involuntarily. Then he is perfect in deg-

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radation. The sublime heights of devilish fancy have been climbed, from whence he can look into the depths of a ruin that await his descent. If it is any consolation to a young man to wear garlands red with his life's blood, that consolation is his, when from self-pollution he passes into that state where emission takes place in spite of himself.

Is there a mockery more deep, more bitter, than that desolation of spirits which an affectionate woman must feel, when she clasps, entwined within her circling embrace, the mere wreck of sensualism; the horrible victim of self-pollution; the creature who, having trained his imagination and bodily powers to mere fancied enjoyments, is now deprived almost, if not entirely, of the capability of resuming the action for which his generative organs were destined? Woman's scorn must be the more intense, because, from the very nature of her own position, she is precluded from giving vent to her feelings of anger and vexation. Love can not be reciprocal in such cases. Animal or organic impulse will prefer that which is more accordant with itself. Even brutes prefer males which are possessed of vigor, power, and beauty.

A Roman physician, whose opinion, supported by John of Acarius, author of a work composed for the Emperor, observes, "If nocturnal emissions continue a little time, the consequences are consumption and death; for the most balsamic part of the humor and animal spirits is dissipated. The whole body falls away, and particularly the back; the patients become feeble, dry, and pale. They languish in slow, melancholy agony." Let this antiquated, yet terribly correct portraiture, deter the thoughtless from practices which lead to such a state.

In conclusion, will state: In cases of this character, I find it best to remove from the mind of the patient every sexual thought and desire, until I can permanently re-invigorate the general system. By this means I have for many years cured the most hopeless cases, many of which have been pronounced by other physicians as incurable. My charges in these cases are only for the medicines used, depending entirely upon the generosity of the patient as reward for my services. Where friends feel they need treatment, address me as per title-page, and prompt attention will be given.

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CHAPTER XXI.

THE URINARY ORGANS.

In this chapter we treat, under the above head, the diseases which follow: —

1. Destitution of Urine.
2. Retention of Urine.
3. Painful Urination.
4. Diabetes.
5. Incontinence of Urine.
6. Unassimilated Urine.
7. Erratic Urine.
8. Urinary Calculus.

1. **Destitution of Urine.** — In this affection the urine is not secreted by the kidneys; there is no sensation of fullness or uneasiness in the bladder, nor any desire to urinate. The excrementitious elements of the renal secretion are more or less thrown off by the other emunctories, but not sufficiently to prevent great constitutional suffering, evinced by general torpitude, apoplectic symptoms, etc. Most of the subjects of this complaint are fat, corpulent persons, considerably advanced in life, and the disease, if not attended to, generally proves fatal in a short time.

2. **Retention of Urine.** — In this disease the urine is duly secreted; but its flow is interrupted by spasm, inflammation, calculi, tumor, stricture, abscess, concretions in the rectum, distention of the vagina, or debility or palsy of the bladder itself. A frequent cause is over-distention of the bladder in consequence of holding the water too long, when it has been inconvenient to void it. This condition is always attended with pain, protuberance, and a frequent desire to urinate.

3. **Painful Urination.** — *Strangury*, or a painful and dribbling discharge of urine, may result from several of the causes of the preceding malady; but generally it is excited by acrid food, drinks, or medicines, particularly cantharides, or Spanish flies, and is attended with a scalding sensation. It is also occasioned by a stricture, or callous thickening of the lining membrane of the urethra, in which case the micturition is extremely troublesome and distressing, the straining often causing the bowels to deject their contents at the same time.

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4. **Diabetes** — Consists in a free or profuse discharge of urine, of a violet smell, and generally of a sweet taste, attended with great thirst and general debility. Medical writings are full of speculations as to the nature and proximate cause of the saccharine matter, or sugar, which is sometimes found in very large quantities in the urine of diabetic patients; but, as they shed no light on the subject, they are hardly worth our attention and limited space. The most important *fact* they have made us acquainted with is, that the skin is *always* in a condition of extreme torpitude.

5. **Incontinence of Urine** — Is a frequent or perpetual discharge, with difficulty of retaining the urine. It is variously occasioned, by an acrid quality of the urine, local irritation, atony or debility of the sphincter of the bladder, and a superabundant secretion. The remote causes are, chiefly, hot drinks, diuretic drinks or medicines, intoxicating liquors, etc.

6. **Unassimilated Urine.** — In this affection the urine is impregnated or colored with various alimentary or medicinal articles, which have been taken into, and have found their way to the kidneys, and through the bladder, unchanged. Rhubarb, prussiate of potash, and other drugs, pass rapidly to the kidneys, without undergoing decomposition; and those articles which are called diuretics are carried to the kidneys directly, without going the rounds of the circulation. In some cases of impaired digestion, the urine is impregnated with a matter resembling chyle. This affection is but an "effort of nature" to rid the body of extraneous ingredients.

7. **Erratic Urine.** — A vicarious discharge of urine at some foreign outlet is not an unfrequent occurrence. It is an evidence of the *vis medicatrix naturæ*, to deterge the blood of its urinous elements when some obstacle prevents their expulsion at the natural emunctory, or when, from atony or disease of the kidneys, it is not secreted at all. In such cases, a urinous fluid has been evacuated by the stomach, bowels, skin, salivary glands, ears, eyes, nostrils, breasts, navel, and at ulcerous surfaces and fistulous openings.

8. **Urinary Calculus.** — Accumulations of calculous matter in the urinary cavities are either *renal* or *vesical*, as they are found in the *kidneys* or *bladder*. Renal calculi comprehend the various forms of urinary *sand* or *gravel;* and vesical calculi constitute the various kinds of *stone*.

The chemical elements of these concretions are urea, uric acid,

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lactic acid, sulphates, hydrochlorates, and phosphates of potash, soda and ammonia, and various other occasional ingredients. The most common form of urinary calculus is that called the *lithic* or *uric acid*, consisting of urea, with some free acid and ammonia.

The *oxalate of lime*, called also *mulberry calculus*, is the next in frequency; and the other most frequent varieties are the phosphate of lime and ammonia, and phosphate of magnesia calculi. They vary in size from fine particles of sand to lumps of several ounces.

Symptoms. — Calculous matter in the kidneys is attended with a fixed pain in the loins, shooting downward toward the thighs, which are affected with numbness; the pain is increased by exercise; the urine often deposits a sandy sediment, which may be either of a white or red color; the pain often alternates with a sense of weight.

The passage of a large gravel or sandy particle through the ureters is often intensely agonizing, and accompanied with nausea, fainting, and generally retraction and inflammation of one of the testes. The pulse, however, is not affected, from which circumstance this affection may be distinguished from inflammation of the kidneys or bladder.

If the calculus is stopped in the ureter, heat, thirst, and fever come on, and the retained urine, being thrown back into the blood, soon occasions intermitting pulse, coma, convulsions, and death.

Stone in the bladder produces a frequent desire of making water, with a difficulty of discharging it; there is acute pain at the extremity of the urethra, and on sounding the bladder the instrument meets with a sonorous resistance. After horseback-riding, or any hard, jolting exercise, the urine is bloody; in some cases it is voided by drops, and sometimes the stream is suddenly stopped before urination is completed. When the stone becomes large, there is a dull pain about the neck of the bladder, and the rectum is affected with a troublesome tenesmus.

Hard water, the free use of salt, alkalies, especially the ordinary employment of saleratus, strong acids, as vinegar, vinous and fermented liquors, are the most common and most efficient causes.

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CHAPTER XXII.

THE SKIN.

WRITERS have named upwards of three hundred abnormal appearances of the skin as distinct diseases; having termed every mark, spot, patch, or pimple, as a malady. The list might be continued to as many thousands, and would still more mystify — which is apparently the only object sought. The table below comprehends all that are important to distinguish.

1. All Cutaneous Rashes.
2. All Scaly Eruptions.
3. Blains, Tetter, &c.
4. Humid Scalls, Itch, &c.
5. Cutaneous Vermination.
6. Macular Skin.
7. Morbid Sweat.
8. Morbid Hair.

1. **Cutaneous Rashes.** — *Rose rash* — *roseola* of authors — is an efflorescence which appears in blushing patches on the cheeks, neck, or arms, often fading and reviving; usually appearing in the spring or autumn. *Gum rash* — *strophulous* — is peculiar to early infancy, and consists in an eruption of red or whitish pimples about the face, neck, and arms, interrupted by irregular patches of inflammatory blush, and manifesting several sub-varieties, called *red gum*, *white gum*, *tooth rash*, *wild-fire rash*, etc. The *lichenous rash* is characterized by a diffuse eruption of red pimples, with a troublesome and sometimes intolerable sense of itching or pricking. It is subdivided into *simple lichen*, *summer rash*, or *prickly heat*.

Roseola is often symptomatic of other diseases. When idiopathic, it is produced by sudden and extreme alternations of temperature, drinking very cold water after violent exercise, etc. Gum rash is produced by coarse woolen clothing, uncleanliness, greasy and highly salted food, and various other bad dietetic habits of either mother or child. Lichenous rash is more frequently attributable to morbid bile than to any other single cause; and when a torpid liver is connected with an obstructed skin, and both of these conditions with a high summer temperature, we have the causes of its worst forms.

2. **Scaly Eruptions.** — The first variety, *dandruff*, consists in patches of fine branny scales, easily separated from the cuticle, which is not irritable or tender. It may affect the head,

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trunk, or whole body; in the latter case the scaliness is red, brown, or yellow.

Leprosy presents patches of smooth, laminated scales, of a circular form, and of different sizes, surrounded by a reddish prominent circle, with a central depression scattered generally over the surface. Its principal sub-varieties are the *common* or *white leprosy*, and the *black leprosy;* so called from the color of the scales, which varies from a bright white to a dusky brown. In some cases the scales exist in scattered patches, and in others in confluent clusters. It has generally been regarded as contagious, although some authors dispute its contagiousness altogether.

Psoriasis — dry scall — rough scabies — consists in bright patches of continuous scales, of indeterminate outline, generally appearing in serpentine or tortuous stripes, and found chiefly on the back and face, but sometimes extending over the whole body. In children it is considered contagious. The surface is often chapped and excoriated, and itches or burns whenever exposed to unusual heat. A sub-variety of this affection has been called *grocer's itch*, *baker's itch*, etc. It frequently affects the hands of grocers, bakers, bricklayers, washerwomen, and bleachers, especially in the spring and fall.

Ichthyiasis — fish skin — is a harsh, papulated, watery rind, or horny incrustation, of a dusky, brown, or yellow color, sometimes covering the whole body, except the head and face, palms of the hand, and soles of the feet; and sometimes the entire body, including the face and tongue. In some cases horn-like excrescences sprout out of the incrustations, and occasionally grow to the extent of several inches. It is regarded by authors as a morbid development of the cuticle, and is generally congenital.

Gross food, personal uncleanliness, and sudden alternations of temperature, are the ordinary causes. Dandruff in the head is often produced by too much head apparel, greasing or oiling the hair, confining it too closely on the head, and excessive brain labor. That leprosy was regarded as emphatically a disease of bodily impurity, when it prevailed among the ancient Hebrews, is evident from the whole tenor of the code of the Jewish lawgiver on the subject of personal cleanliness, especially as related to the food of his people, and the rigid measures of purification deemed necessary in the treatment of lepers under the Mosaic dispensation.

3. **Blains.** — These affections consist in roundish elevations of the cuticle, containing a watery fluid.

In *water-blebs*, the eruptions, which are mostly distinct, and break

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and heal without scale or crust, contain a reddish transparent fluid. They appear successively in various parts of the body, of the sizes of peas, filberts, or walnuts, sometimes bursting and healing in three or four days, but occasionally forming an ulcerated surface.

Tetter is an eruption of vesicles in small, distinct clusters, with a red margin; transparent at first, but soon becoming opaque; it is attended with tingling or itching, and the vesicles concrete into scabs, and desquamate in the course of two or three weeks. It presents several sub-varieties, as *miliary*, when the vesicles are millet-sized; *corrosive*, when the vesicles are hard and discharge an acrid, corroding fluid, which spreads in serpentine trails; *shingles*, when the vesicles are pearl-sized, and spread in clusters around the body like a girdle; *ringworm*, when the vesicles have a reddish base and are united in rings; *rainbow-worm*, when the vesicles, which unite in small rings, are surrounded by larger concentric rings of different hues; and *local*, when they are limited to a particular part.

In *rhypia — rhupia — sordid blain* — the eruption consists in broad, distinct vesicles, having a slightly inflamed base, and filled with a sanious fluid, which often produces gangrenous and offensive eschars. The scabs are thin and superficial, and easily rubbed off and reproduced.

Eczema — heat eruption — consists in minute, distinct, but closely crowding vesicles, containing a transparent or milky fluid, attended with troublesome itching or tingling, and terminating in thin scales or scabs.

Indigestible food and intoxicating liquors are the ordinary causes of water-blebs. Tetter is generally owing to acrid bile, thrown upon the surface. Rhypia almost always affects children who have been reduced by bad nursing and bad drugging. Heat eruption is usually produced by violent exercise, exposure to hot air, or the direct rays of the sun, and not unfrequently by the use or abuse of mercury.

4. **Humid Scalls.** — The present genus of scall or scale-skin diseases is characterized by an eruption of small pustules, either distinct or confluent, which harden into crustular plates.

Impetigo — running scall — appears in yellow, itching, clustering pustules, terminating in a yellow scaly crust, intersected with cracks. It is generally confined to the hands and fingers, but sometimes extends over the lower extremities, and occasionally affects the neck and face. A thin ichor or purulent matter often issues from the numerous cracks, which corrode the skin and cellular

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membrane; and in some cases the aggregated scabs form a thick, rigid casing around the affected limb so as to impede its motion. Sometimes the disease commences with a puffy swelling of the face, with edema of the eyelids, very much resembling erysipelas, but without its smooth polish.

Porrigo — scabby scall — tinea — consists of straw-colored pustules, which concrete into yellow scales. Its principal sub-varieties are, the *milky scall*, or *crusta lactea*, which chiefly affects infants at the breast, the pustules commencing on the cheeks and forehead, and often covering the whole face with a continuous incrustation; and the *scalled head — tinea capitis* — found mostly in young children, marked by pustules which commence in the scalp in distinct patches, and gradually spread until the whole head is covered, and the roots of the hair destroyed. It is generally regarded as contagious. Other less important forms have been called *lupine*, *honeycomb*, *furfuraceous*, *ringworm*, etc.

Ecthyma — papulous scall — is characterized by large, distinct pustules, raised on a hard red base, and terminating in hard, greenish, or dark-colored scabs. It occurs at all periods of life, from the earliest infancy to advanced age, and is very often symptomatic of other diseases.

Scabies — itch — is an eruption of minute pimples of a papular, pustular, vesicular, or mixed character, accompanied with an intolerable itching; it is found chiefly in the flexures of the joints, or between the fingers, and is highly contagious. It is one of the most complicated of the cutaneous diseases, presenting many sub-varieties, the principal of which are the *popular* or *rank itch*, the *vesicular* or *watery itch*, the *purulent* or *pocky itch*, the *complicated*, in which the disease extends over the body, often affecting the face, and the *mangy itch*, which is produced by handling mangy animals.

Most of the forms of humid scalls are owing to the combined operation of two sets of causes, one of which is negative and the other positive. The negative causes are the absence of water, soap, flesh-brushes, and coarse towels; the positive are gross and irritating food, as fried pork, salt ham, sausages, old cheese, fried cakes, and cooked and burnt fats of all kinds, and acrid or stimulating drinks, as hard cider, acid wines, and ardent spirits. Some forms of humid scall, which are confined to the hands and feet, are occasionally produced by severe exposures to cold or wet; a remark which holds true, also, of some forms of dry scall which are confined to the extremities. Mothers ought to know that *their* dietetic

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habits may induce these and many other cutaneous diseases in their offspring while nursing, and even before birth.

5. **Cutaneous Vermination.** — The cuticle may be infested with the *common louse*, which mostly inhabits the heads of uncleanly children; the *crab-louse*, which is found chiefly about the groins, pubes, and eyebrows of unhealthy persons, producing extreme itching; the *common flea*, whose eggs are deposited on the roots of the hair and on flannel; the *chiggre*, a West Indian flea, not more than one fourth the size of the common flea, which deposits a bunch of minute eggs in the feet of dirty persons, sometimes occasioning ulceration and mortification; the *tick*, of which there are several varieties — the *domestic tick*, *itch-tick*, and *harvest-bug* — whose bite occasions an itching and smarting pain; the *Guinea-worm* of the Indies, the *gad-fly*, which is common to quadrupeds, but sometimes burrows in the mucous membrane of human noses; and the *hair-worm*, which, by the way, involves a disputed point, whether the infestment is a *live animal*, or merely a morbid growth of *real hair*.

6. **Macular Skin.** — Simple discolorations of the surface are generally the result of depraved secretions, retained excretions, the introduction of drugs or foreign substances in the body, blows or bruises, or of exposure to strong cold winds or hot sunlight. Sometimes, however, a change in the color of a part or of the whole skin takes place, which we are unable to trace to either of these causes; and one example — cyanosis — is frequently owing to organic malformation of the heart.

In the *veal-skin* variety the skin is marked by white, shining, permanent spots, the superincumbent hairs falling off and never reappearing. The *mole* is a permanent, circular, brown patch, sometimes slightly elevated, and crested with a tuft of hair. *Freckles* are yellowish-brown dots on the cuticle, resembling minute lentil seeds, and often transitory. *Sunburn* is a tawny discoloration from exposure to the sun, which disappears in the winter; *orange skin* is mostly confined to young infants whose mothers were affected with torpidity of the liver during gestation, but it sometimes appears in adult life from biliary obstruction. *Piebald skin* is a general marbled appearance of the cuticle, with alternate patches of black and white. *Albino skin* is a dull-white state of the cuticle, with rosy pupils, weak sight, and white or flaxen hair; it is usually found among negroes, but is sometimes known among the white races; it is sometimes congenital, and in some instances the adult black, and also white, have changed to albinoes.

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Cyanosis — blue disease — is known by the whole skin being more or less blue, the lips purple, with general dullness of mind and debility of body; it is always congenital.

Severe fevers have been followed by various permanent discolorations; even a black man has been transformed into a white man by this cause. In some cases spotted and motley-colored skins are hereditary. Mineral medicines often produce livid spots, or a universal dingy, bluish, or dark appearance of the skin. Nitrate of silver is a very common cause. When administered for several weeks, it frequently produces a deep tawny and uniform discoloration, approaching to a black, being deepest in the parts most exposed to the light. Sometimes, however, discoloration from this drug appears in patches, and sometimes one half of the body is affected.

The blue disease is generally owing to some malconformation of the heart, the most common of which is a communication between the two ventricles, thus rendering the decarbonization of the blood imperfect, and giving rise to the venous or carbonaceous discoloration. Nitrate of silver has also produced a bluish tinge of the whole skin, closely resembling cyanosis.

7. **Morbid Sweat.** — *Profuse perspiration*, when not a symptom of some acute disease, is an evidence of debility, and requires no attention save a course of tonic bathing and regimen. *Bloody sweat*, though regarded as an idiopathic disease by some authors, is usually a vicarious affection, as in mismenstruation, or the result of vehement emotion, violent exertion, or intense agony. *Partial sweats* are, I believe, always symptomatic. *Colored sweats*, which may be green, blue, black, or yellow, result from obstruction of the liver or kidneys, or from some metallic or mephitic impregnation. *Scented sweat* may be rank or fetid, sour or acrid, sulphurous or musky, saline, aromatic, etc. Most of these varieties depend on the dietetic habits of the individual, in connection with the amount of bathing practiced. Some persons, who never, or but seldom bathe, and eat strong food, are exceedingly disagreeable to the olfactory nerves of others. Many persons who exercise much on foot, wear flannel stockings, and bathe rarely, have a horribly offensive scent, which becomes intolerable on exposing the feet to the fire. I once had a patient who exhaled from the axillæ a strong musky, or rather blue-dye odor, for which he could assign no probable cause. *Sandy sweat*, known by a reddish sandy material concreting on the surface, indicates great deficiency in the functional action of the kidneys, or great excess in the saline and earthy matter taken into the system with the ingesta.

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8. **Morbid Hair** (Trichiasis). — Even the hairs of our heads may become deranged by our physiological transgressions, although, next to the bones, they are the most indestructible of our bodily constituents. The *bristly* or *porcupine hair* is usually regarded as an effect of gross nutriment connected with general habits more congenial with *perfect animal* than *progressive human* nature. *Matted hair — plica polonica* — the hairs becoming vascularly thickened, inextricably entangled, and matted together by a glutinous secretion, is supposed to result from covering the head too closely, as with a thick woolen bonnet or leather cap; with little or no attention to combing, washing, or in any way cleansing the head: *Extraneous hair — trichosis* — is most commonly noticed in bearded women, and has been imputed to excessive menstruation, the excessive use of pork, shell-fish, and other gross foods. *Forky hair* — the hairs of the scalp weak, slender, and splitting at their extremities — is a common complaint, depending for its immediate cause on defective nutrition in the bulb or root. *Gray hair*, when not "frosted by age," may be produced by fright, terror, grief, excessive brain labor, violent fevers, etc. *Baldness* may result from the same causes as gray hairs, and is often the consequence of skin diseases. It is far more common in males than in females, — which fact seems to corroborate the physiological notion which some have advanced, that the common practice of cutting the hair and shaving the beard is a source of bodily infirmity. *Aerated hair* — patches of bald spots in the scalp or beard — is probably owing to some obscure skin disease or preternatural excitement of some portion of the brain. *Miscolored hair* — the hair changing to blue, black, green, or spotted — occasionally results from fevers, terror, heating the head, mineral and metallic vapors, etc. *Sensitive hair* is usually owing to cerebral excitement; and this is usually owing to wounds or injuries of the head, and febrile or inflammatory affections. The hair, in some instances, is so acutely sensitive, that the slightest touch, or the cutting of a single hair, gives exquisite pain.

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CHAPTER XXIII.

TUMORS.

Every tumor is a morbid swelling or a new formation — an increased or perverted development of organic substance. The common causes are injuries, as pressure, blows, bruises, etc., although it is seldom that we can trace any particular tumor to the particular accident from which it originated. They may also arise from capillary obstruction; and this is induced by many of the unhealthful eating, drinking, and anti-bathing habits of society. A mechanical injury of the vessels of a part, or a long-continued inflammation or obstruction, may produce a change in its nutritive function, by which an abnormal structure is developed; and when once this perverted action commences, it may progress to an indefinite period or extent. Tumors are distinguished into *adipose*, *cellular*, *fibrous*, *cartilaginous*, *osseous*, *encysted*, *fungous*, *indurated*, *scrofulous*, *malignant*, *pulsating*, *vascular*, etc., according to the structure affected, and the form, character, and consistence of the swelling.

The older surgeons divided tumors into *sarcomatous* or *fleshy* — comprehending those which are composed of fatty, fibrous, medullary, fungous, or other substances softer than bone; *osseous* or *bony*; *osteo-sarcomatous* — when involving both the bony and fleshy structures; and *encysted* — containing a fatty or fluid substance within a globular cyst, as in the case of *wens* and *hydatids*.

Bronchocele. — This tumor, commonly called *goiter*, or *swelled neck*, is a preternatural enlargement or hypertrophy of the thyroid gland. In its early stage it is soft and elastic; but as it advances in size it becomes firmer, and spreads toward the sides of the neck, attaining sometimes a prodigious magnitude. In the valleys of Switzerland, Savoy, the Tyrol, Derbyshire, and some other places, it is very prevalent; most frequently, however, affecting young females. It is found in all parts of the United States, but more commonly in low, moist, marshy, or malarious situations. In this country the disease seldom increases to a dangerous extent, the deformity being the principal source of uneasiness.

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Under this head, Tumors, are also classed warts, corns, bunions, carbuncle, scirrhus and cancer, varicose veins, white swelling, etc., most of which have been mentioned in detail, with symptoms, in the preceding chapters, and are all distinguished as in the description above.

CHAPTER XXIV.

ULCERS.

1. Fever Sores.
2. Fistula in Ano.
3. Fistula in Perineo.
4. Strictures and Fissures.
5. Salivary Fistula.
6. Fistulæ Lachrymalis.

Ulcers are purulent solutions of the continuity of the animal texture. In a general sense, they are distinguished into the *benign* or *healthy*, and the *malignant*, the *indolent*, and the *irritable*, etc. They are also subdivided into many varieties, according to their causes, nature, tendencies, consequences, etc., as *simple*, *sinuous*, *fistulous*, *fungous*, *gangrenous*, *cancerous*, *scorbutic*, *syphilitic*, *scrofulous*, *inveterate*, *phagedenic*, *virulent*, *sordid*, *cacoethic*, *carious*, *varicose*, etc. Many tumors, if not arrested in their early stage, become ulcers, as cancer, carbuncle, etc.

An ulcer is called *healthy* when its purulent matter is a normal secretion, unattended with the destruction of the surrounding parts. Its surface is florid; its granulations are small, and of uniform size; it is without offensive smell; and it heals regularly, leaving little or no scar. A common boil is an example.

An *irritable ulcer* is very tender to the touch; extremely liable to bleed; its discharge is slight, and of a thin, ichorous, or sanious appearance; its color is dark or purplish; its granulations are imperfect and spongy; its edges are ragged and everted; the parts around are red, swollen, and often edematous.

The *indolent ulcer* is the more frequent form of "running sore" we meet with; its edges are inverted, rounded, thick, glossy, and regular; the granulations are of a dull, pale aspect, and insensible; the pus is thick, of a dark-yellow color, and adheres to the bottom of the ulcer. It is most frequently located on the lower extremities.

Varicose ulcers may be either irritable or indolent; they are connected with enlargements or varices of the adjacent veins. They are generally situate below the knee.

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Fistulous ulcers are sinuous cavities, having a narrow outlet, the disease being kept up by an altered texture of the part.

Specific ulcers result from the inflammation of specific diseases, as scrofula, salivation, syphilis, etc. Other distinctions, depending on mere varying appearances, or on common causes and terminations, are of no practical importance.

1. **Fever Sores.** — The most common form of chronic ulcers are known as "*fever sores*," "*brandy sores*," "*whiskey sores*," etc., and sometimes, in view of their usual locality, "*old sore legs*." They are generally connected with, and the penalty of, intemperate habits. I have known several bad cases among the children of liquor-drinking parents. The ulcers are deep, the limb is swollen, in some cases nearly as hard as bone, and frequently purple or dark. The character of the sore may be irritable, or indolent, or of a mixed character, some portions being irritable, and others indolent.

2. **Fistula in Ano.** — Any abscess about the rectum, opening either within or without the anus, or both, is known by the term *fistula in ano*. Fistulæ are so common in this situation that some physicians, whose practice, "from being general, is confined to a particular branch of their profession," have selected "diseases about the anus" as the particular field which is to engage their "profound attention." Fistulæ in ano are usually connected with piles, and both have habitual costiveness as their common cause, although the former is sometimes occasioned by wounds and injuries.

When there is an open communication between the rectum and the cutaneous surface, the fistula is called *complete;* and *incomplete* or *blind* when it communicates with but one; the latter is called *blind internal* or *blind external* fistula, as it opens into the bowel, or upon the external skin. In a majority of cases the fistulous pipe, or *sinus*, is tortuous and branching, several distinct openings being internally connected. The sinus is lined with a semi-cartilaginous, or callous growth, having the secreting property of mucous membrane, from which exudes a thin, yellowish pus; this indurated surface is generally extremely tender to the touch.

3. **Fistula in Perineo.** — A sinuous ulceration in the perineum is generally the result of a stricture in the urethra; the urine, thus obstructed, acting upon the lax structures of the part, often occasions extensive ulcerations, attended with very offensive discharges of purulent or sanious matter.

4. **Strictures and Fissures.** — Strictures and fissures of the urethra and rectum, though not in any sense ulcers,

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are so intimately connected with fistulæ that they may as well be considered in this place. The membranous portion of the urethra, between the bulb and the prostate gland, is most frequently strictured, although a stricture may occur at any part of its channel. The disease may be *spasmodic* or *organic*. In the former case obstruction is temporary, and is produced by a partial or total obliteration of the canal in consequence of its sides being pressed together by the contraction of the surrounding muscular fibres. In the latter form the obstruction is permanent, and results from a morbid thickening of the mucous membrane. A partial organic stricture may become total by spasmodic action, superadded to the structural difficulty. The most frequent cause of stricture is gonorrhea, or, rather, the irritating drugs which are employed to cure it. Injuries from the passage of stone or gravel, and by surgical instruments, sometimes produce it.

Symptoms. — The spasmodic stricture is known by the sudden stoppage of the stream after it has reached the irritable spot; there is also a desire to urinate frequently and hurriedly. In the organic stricture the stream becomes crooked, gradually diminishes, and at length divides, and finally passes only in drops. The excretion eventually becomes yellow and purulent, evincing ulceration in the urethra or bladder. The constant habit of straining often induces hernia or piles; and when extensive ulceration has taken place, rigors and hectic fever are the precursors of a fatal termination.

Stricture of the rectum is a thickening and hardening of the intestine, resulting from constipation; it produces a serious difficulty in passing the feces, which are evacuated in small, contracted, elongated, or flattened lumps, or in a fine stream. As in the case of fistulæ, all callous formations must be removed.

Fissures of the anus are ulcerous grooves in the rectum, extending upward from the orifice. The edges of the crack or fissure become thickened and hardened, and constantly exude a sanious fluid.

5. **Salivary Fistula.** — Wounds of the face, which sever some one of the excretory ducts of the salivary glands, are often followed by an obliteration of the cavity of the duct, and the formation of a fistulous opening through which the saliva escapes upon the *outside* of the face.

6. **Fistulæ Lachrymalis.** — In the true lachrymal fistula the lachrymal sac is distended to a tumor at the inner corner of the eye, which ulcerates and forms an opening through which the tears are discharged on the face, instead of passing to the nose. There is also a morbid secretion of the sac distinct from the tears.

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Boils of all kinds, ulcerations of the bony structure, gangrene, etc., come appropriately under these forms, and have all been described in preceding chapters.

CHAPTER XXV.

ABSCESSES.

1. Empyema.
2. Maxillary Abscess.
3. Mammary Abscess.
4. Onyx.
5. Lumbar Abscess.
6. Hip Disease — Coxarum Morbus.
7. Prostatic Abscess.

An *abscess* — *apostеme* — *imposthume* — is a collection of purulent matter in a cavity, or in the substance of an organ or part of the body. Sometimes the pus is contained in an orbicular cavity lined by a cyst, and sometimes it is infiltrated into the meshes of the areolar tissue. The formation of an abscess is often preceded by chills, or shivering fits, called *rigors;* and just before suppuration takes place, the pain, tension, swelling, throbbing, etc., are increased. After matter is formed, a sensation of weight and throbbing continues in the part, and a conical projection soon denotes the pointing of the abscess, preparatory to its bursting and discharging its contents. Some abscesses will *point* in a week; others may not do so in several months. Generally a *fluctuation* may be felt in the swelling previously to its pointing. In order to distinguish the fluctuation of an abscess to the best advantage, two or three fingers should be placed on one side of the swelling, and the opposite side briskly tapped with the fingers of the other hand.

Deep-seated abscesses, and those formed beneath fasciæ and dense fibrous tissues, do not readily point, but they are attended with greater constitutional disturbance; and severer hectic symptoms, as shiverings, night-sweats, small, frequent pulse, etc. A sense of weight and coldness in the part will also succeed the acutely throbbing pain; and not unfrequently the integument over the abscess will become edematous.

The general treatment of abscesses is precisely the same as that of inflammatory tumors and ulcers preceding the formation of matter.

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1. **Empyema.**—This is a collection of matter in the cavity of the pleura. Inflammations of the lungs or of their membranes occasionally result in suppuration, producing the abscess under consideration. It is known by a manifest enlargement of the side affected; a dry, tickling cough; laborious breathing, which is easiest in the erect posture; fixed pain in the chest, with difficulty of lying on the sound side.

2. **Maxillary Abscess.**—This disease is an ulceration of, and collection of matter in, the antrum of the upper maxillary bone. It is generally produced by the irritation of decaying teeth, and may exist for years, passing for toothache. It may be known by severe and obstinate pain in the face, just below the prominence of the malar bone; the fetor is also extremely offensive to the patient, and to others about him. Sometimes there is a considerable discharge of offensive matter from the nose, and in some cases the face is much swelled and disfigured.

3. **Mammary Abscess.**—Abscess in the breast is sometimes the result of injuries, as blows, pressure, etc., but generally it is the consequence of bad management or mal-treatment during the periods of gestation, childbirth, and lactation. The disease usually appears in four or five weeks after parturition; in about ten days thereafter suppuration takes place, beginning in several distinct parts, and forming many separate sinuses, all of which, however, communicate. It opens at one or several points.

4. **Onyx.**—A collection of purulent matter between the laminæ of the cornea, having the shape of a nail, is so called in surgical technology. Its form, however, is nearly semi-lunar, like the white mark at the root of one of the finger nails. It usually occupies the lower edge of the cornea, and may be distinguished from *hypopyum* by its form and situation remaining unchanged in all positions of the patient's head.

5. **Lumbar Abscess.**—This is one of the most formidable and fatal of abscesses. It commences with a dull, heavy aching in the lumbar region; pains shooting down the spine and thighs, and a lameness in one or both lower limbs, with a difficulty of standing erect; there is usually a drawing up of the testicle of the side more particularly affected; the patient is easily fatigued by exercise, and when lying down is disposed to flex the thighs or the abdomen. At length the local pain becomes throbbing, chills and night sweats occur, a fluctuating enlargement appears along the psoas muscle, and the apex of the tumor presents itself immediately

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below the groin. The disease usually occurs in scrofulous persons, and is often connected with caries of the spine, in which case curvature of the spine and paralysis of the lower extremities are apt to result.

6. **Hip Disease** (Coxarum Morbus). — This disease, like the preceding, is seldom cured in the regular way. It consists in an abscess originating from caries of the head of the os femoris. It generally occasions a luxation of the hip-joint, and a permanent shortening of the limb. The symptoms come on insidiously. Generally a slight pain in the knee is the first thing noticed. On a close examination the limb will be found elongated, which causes the knee to be slightly bent, and the whole limb more or less disfigured. At this period the pain will affect the groin, and may be severe. Extensive ulceration has generally taken place when purulent matter makes its appearance. This may be discharged at several points, although the abscess commonly opens in the groin. In some cases the head of the femur is not destroyed, and anchylosis results, but usually the head is dislocated upon the dorsum of the ilium, where it may form a new joint, and produce a deformed and shortened limb. When the head is entirely destroyed, the limb will be shortened several inches.

7. **Prostatic Abscess.** — Abscess of the prostate gland is a result of acute inflammation, and may be known by rigors, with swelling, heat, and redness of the perineum externally. As soon as matter has formed, the abscess must be opened at once, lest the matter work its way into the rectum or urethra.

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CHAPTER XXVI.

RUPTURES — HERNIA.

THE terms *hernia* and *rupture* are commonly employed as synonymous; but writers who are strict in the use of language apply the former word to all protrusions of the viscera or parts from their natural cavities, while the latter term is limited to abdominal protrusions. The word rupture, however, is always a misnomer, for it implies that something is burst or torn, which is not necessarily the case.

Varieties of Hernia. — These are innumerable. They may involve the *brain*, *lungs*, *stomach*, *intestines*, *bladder*, the different portions of the *peritoneum*, and, in rare cases, the *liver*, *spleen*, *uterus*, or *ovaries*. The parts commonly affected with hernia are the *abdominal viscera;* of these the *intestines*, or *omentum*, or *both*, are the portions usually protruded; and the *abdominal ring*, the *navel*, and a point at the inner side of the *femoral vein*, just below Poupart's ligament, are the *places* where herniæ most frequently appear. They are met with occasionally at all points of the *linea alba*, at the *foramen ovale*, the *ischiatic notch*, in the *perineum*, and in the *vagina*.

Distinctions. — In abdominal hernia, the protruding part usually pushes along a portion of the peritoneum, which forms a sort of pouch, and is called the *hernial sac;* the narrow part of which is the *neck*, and the expanded portion the *body*. The bladder and cæcum, however, not being contained in the peritoneum, do not have a complete sac; and in cases of wounds and ulcerations the sac may be absent; nor does it exist in *internal* herniæ, in which there is really no protrusion at all.

In complete or direct inguinal hernia there are *two necks*, one at the internal, and one at the external ring.

Hernia is called *reducible* when the displaced part is attended with no disturbance of the general health, and is susceptible of being easily replaced; when incapable of replacement, from its size or from adhesions, it is called *irreducible* or *incarcerated;* and when the incarcerated part is constricted and inflamed, obstructing the

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passage of feces, and causing violent pain and sickness, it is called *strangulated.*

Blows, falls, violent exertions, as lifting, wounds, dropsy, abscesses, pregnancy, straining at stool, hard riding, and severe coughing, are the common exciting causes, while general debility is the general predisposing cause. All of these causes are favorable to these complaints, and some of them alone produce them; but *the* general and special cause is *costiveness.* Without this predisponent condition, most of the other causes named would be powerless. Many persons, perhaps a majority, in *refined* society scarcely ever go to stool without being obliged to strain dangerously to respond to the "solicitation of nature." And when this straining has been kept up for years, it is not remarkable that very slight accidents should cause the "bowels to gush out" of their natural inclosures in the shape of hernial protrusions. Some have estimated the subjects of hernia to be one eighth of an entire population.

In a *reducible* hernia the tumor may appear gradually or suddenly at some one of the points above named; its size is changeable, being larger when the patient stands, and smaller when he lies on his back; compression will generally diminish it; it is usually more tense after a full meal, or when the patient is flatulent; when the patient coughs, an impulse may be felt at the tumor, as if air were blown into the swelling. When the sac contains intestine only, the tumor is uniformly smooth and elastic, and also painful to pressure; when it contains omentum only, the tumor is insensible, and has a more flabby, or doughy, and somewhat unequal feel; and when it contains both, — *entero-epiplocele,* — a part of the contents of the hernial tumor will slip up with a gurgling noise, leaving behind a portion less readily reduced.

Irreducible herniæ are distinguished by more or less difficulty in evacuating the bowels; colic pains are frequent, with a variety of dyspeptic symptoms. They do not usually occasion great inability or inconvenience, but are liable to *intussusception,* — a slipping of one portion of bowel into another, — and this is a dangerous and often fatal accident.

Strangulated hernia presents, first, an irritable condition of the parts affected, with a hectic flush externally, and a pain at the point of constriction; the pain generally extends to the diaphragm, followed by nausea, vomiting, obstinate constipation, rapid pulse, and general feverishness. The peristaltic action is often inverted, and fecal matters are ejected from the stomach. If reduction is not soon effected, the bowels become distended with air, the abdomen

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hard and tense, the extremities cold, while hiccough, clammy sweats, and a sinking pulse, with a sudden *cessation of the pain*, denote the existence of mortification, and the approach of death.

Umbilical and Ventral Herniæ. — Infants are most subject to *umbilical* hernia; the protrusion is generally imputed to straining while crying, when the abdominal bandage which is placed around the body is *too loose*. This is one among the many great errors which have crept into professional men's minds. The truth is, that this bandaging the body is just what produces the rupture in a large proportion of cases. It is this that makes the child cry and strain; and the tighter the abused infant is girded with it, the more it will cry and strain, and the more liable it will be to have a rupture. It sometimes occurs in parturient females from the muscles giving way during the powerful contractions upon the gravid uterus.

The cure of these several complaints depends much upon the character and extent of the injury. Trusses, pads, springs, etc., have, in turn, had their friends, and lost them again. The long experience I have had with these cases, and the many cures I meet with, convinces me that, by my mode of treatment, but very few need despair of a permanent cure; the use of a truss, or other inconveniences, being, in most cases, entirely dispensed with. Persons who have the misfortune to be thus afflicted can address me specially on this subject, giving full details; and if the case is curable, prompt relief will be given, soon to be followed by a permanent cure. If not curable, the best advice to relieve all unnecessary inconveniences will be given.

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CHAPTER XXVII.

SURGERY.

This being a "speciality," and requiring more or less professional experience and immediate attention, the details can be of no special benefit here. In case of emergency, the better plan is to call at once the most experienced surgeon to be had. But allow no "butchery," unless it be as a last resort, and the case demands it.

Injuries of all Kinds — Such as concussion, compression, bruises, strains, burns and scalds, wounds and injuries of every character, and from whatever cause. Should any seated inflammatory or chronic complaint be the result, which resist the ordinary home cure, a judicious and practicable treatment can be had by giving particulars of each special case, and permanent cures will be given in all curable cases.

CHAPTER XXVIII.

POISONS — MINERAL AND VEGETABLE.

Since so many cases of poisoning occur, how important that every one should have some information respecting antidotes to them, as the only prospect of affording benefit is by administering antidotes immediately after poisons have been swallowed.

1. **Laudnum or Opium,** and all other Narcotics. — Give in each case a double portion of *common emetic*, with plenty of herb tea; and a short time after, say fifteen minutes, a wineglassful of *lamp oil* (not kerosene). If this does not operate, repeat in twenty or thirty minutes; the person to be kept walking. Copious vomiting soon takes place, and will restore every one. This course may be pursued where any kind of poison has been taken into the stomach. As a substitute for the above emetic, give a large teaspoonful of pulverized *black mustard*, mixed with water; it operates promptly, and is perfectly safe.

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When there is suspicion, or symptoms of any kind, of poison having been taken by accident or design, administer immediately large quantities of milk, then give an emetic, and repeat till free vomiting ensues; also lamp oil, as above.

TREATMENT. — For acids, give vinegar and water; for alkalies, give vinegar and lemon-juice, to be accompanied with the free use of the mucilage of slippery-elm bark; after vomiting has been excited, a wineglassful of sweet oil may be administered; it will be necessary, at the same time, to administer injections or clysters also, composed of equal parts of the mucilage of elm bark and milk, sweetened with molasses, and a gill of olive oil added; a quart of this must be introduced every half hour. Where these means fail, let a stomach pump be procured, and used. I consider lobelia, in the form of tincture or powder, to be a good antidote to all kinds of vegetable poisons. Vinegar has been often recommended for laudanum. The person must be aroused, and kept awake and in motion as much as possible, by shaking and moving him about. But the greatest reliance must be placed upon the speedy evacuation of the stomach by emetics.

A late writer states that severe whipping has had the desired effect, by the irritation produced. Rather a severe remedy! In cases of poison by fungi and other narcotic plants, a similar course of treatment is required.

Where vomiting and other symptoms continue, an ounce of the bicarbonate of potash may be dissolved in two quarts of water, and a teacupful drank frequently; fomentations to the stomach and bowels will also prove beneficial. Lime water is highly recommended by Orfila as an antidote to arsenic.

The same writer states that, of all antidotes to the poison of the *corrosive sublimate*, he has found the white of an egg, dissolved in water, to be the most powerful and efficacious; it must be diluted with water before it is given. In cases where persons have been poisoned by taking verdigris, emetics must first be given, and afterward a solution of saleratus (bicarbonate of potash) should be freely taken, as directed above.

For any of the salts of copper, the same remedy as the last.

Sugar is said to be an excellent antidote to verdigris. The effects of lead must be remedied by the use of castor oil and injections.

Salt and water counteract the corrosive effects of the nitrate of silver or *lunar caustic*, and make the best antidote. A person suffering under the deleterious effects of this, should drink several glasses of it, in the proportion of a tablespoonful of the salt to two pints of water. Vomiting will ensue, and the symptoms diminish.

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Milk is the best antidote of muriate of tin, by which it is completely coagulated. The coagulum contains muriatic acid and oxyde of tin, which are not deleterious.

An over-dose of tartarized antimony sometimes produces severe consequences. In such cases our chief dependence is to be placed upon mucilaginous and diluent drinks, to speedily remove the medicine from the stomach; and when this is done, opium, and perhaps mustard plasters, may be of some service.

In cases where nothing can be administered by the mouth, *lobelia injections* may be given.

For oil of vitriol, the best antidote is large doses of magnesia and water; or, what is still better, equal parts of soft soap and water. For aquafortis, same remedy as last. For oxalic acid (this resembles Epsom salts, and is often used in bedbug poisons), chalk and water renders it perfectly inert, forming an insoluble salt of lime; magnesia is also a good antidote. For tartar emetic in poisonous doses, Peruvian bark and water, it is stated, render it perfectly harmless; if the bark cannot be procured, use a strong decoction of tea until it can. For saltpetre (which also is sometimes taken for salts), a prompt emetic of *mustard* and water; afterward, mucilages and small doses of laudanum. For lunar caustic (the principal ingredient in indelible ink), common salt forms an invaluable antidote, which is harmless.

For corrosive sublimate, metallic substances, mercury, verdigris, tin, lead, sulphuric acid, and arsenic, white of egg may be given, and then lime water or an emetic, with plenty of water. In all alarming cases, as before directed, give immediately a double portion of the emetic powders, with the addition of a little linseed or sweet oil; in place of this give flour of mustard. For arsenic, cases are cured by large doses of magnesia,

2. **Poison Vine.** — Both men and animals are severely poisoned by a vegetable called the poison vine, or mercury, which runs upon trees, fences, etc. It causes great heat, itching pain, swelling, pain, and inflammation, and gives rise to unpleasant and serious symptoms.

An excellent remedy for this kind of poison, both for man and beast, is, apply a wash to the parts, made by simmering the bark of elder in buttermilk, every two hours; after which apply a little sweet oil, and then, if practicable, a poultice made of the slippery elm bark. Give, occasionally, a dose of sweet oil.

A horse, a short time since, became so poisoned by this vine that his eyes were entirely closed; this remedy removed the complaint in about twenty-four hours. *Elder, brown,* and *celandine ointments* may be applied; also a weak solution of salt and water.

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CHAPTER XXIX.

IMPREGNATION.

"The formation of the zoosperm, or seminal animalcule, in man, and the ovum in woman, belongs to the domain of organic life, yet all the highest powers of the soul, and the soul's organs, are engaged in the work. For there is to be more than a mere bodily organization formed — a mass of bone, muscle, and various tissues. First of all, there is to be generated an immortal soul. God, doubtless, made the first human souls; but He made them with the power of generating all other souls, just as the first bodies have generated all other bodies. God created no souls but the first, and the parent of any child is the parent of his soul as much as of his body. In fact, it is the soul, so generated, which forms the body which, for some years, is to be its habitation, the medium of its perceptions, and the instrument of its expression."

This sublime function of the generation of human beings, soul and body, is performed by the two male and female organs, the testes and the ovaries, acted upon by every human faculty, and modified by every human circumstance and action. And now the reader will better see the force of what I have said of the influence of these organs upon mind and body, as shown when they are lost, diseased, or perverted from their natural uses.

It is not in my power to solve the questions respecting the portions of the mental and physical organization contributed by either parent. I see no reason to believe in any such partition. I think each has a share in the formation of every part, though in any part the influence of one or the other may preponderate. A child may resemble either of its parents, or both. It may have the mind of one, and the physical constitution of the other, or both may be mingled. If a man have a powerfully developed and active, but not exhausted, mind, and a woman a vigorous organic system, it is likely that their child will resemble each in their strongest points. Germ cell and sperm cell, I fully believe, are both engaged in the formation of every faculty and organ.

The sperm cell is the result of the action of that complex organ,

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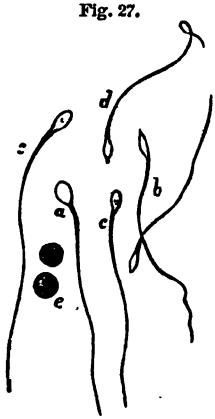
the testicle — an organ composed of a vast surface of tubular structure, and amply supplied with nerve and blood, by which, and out of which, these animate cells are formed. Then, within the primitive sperm cell, appear a number of smaller cells, and within these are found, first in a circular mass, a great number of exceedingly minute living beings, consisting of an oval-shaped body, and a long tail. This animalcule swims in a fluid substance, like the white of an egg, but more opaque, formed partly in the testes, and partly secreted by the prostate gland. In full health and vigor, these zoosperms are very numerous and active; in sickness or exhaustion they are few and weak, and in certain states of the system, they entirely disappear, and the power of fecundation no longer exists. The primitive germ cell first bursts, setting free the smaller cells, and these in turn liquefy, and set free the now perfected zoosperms; the seminal fluid containing them then passes on through the vasa

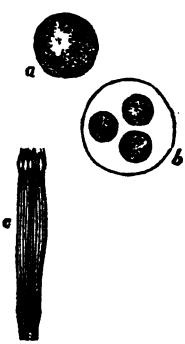
Fig. 27.



HUMAN SPERMATOZOA.

These are magnified from nine hundred to one thousand diameters. *a.* Spermatozoon presenting the flat surface. *b.* One viewed in profile. *c.* Showing a circular spot on the surface, which some suppose to be a sucker. *d.* Shows an elongation from the head, like a proboscis. *e.* Granules, or cells, in which other zoosperms are preparing.

Fig. 28.



EVOLUTION OF ZOOSPERMS.

Objects in human semen, magnified one thousand times. *a.* A large, rounded corpuscle. *b.* A globule of evolution, which encloses three roundish granular bodies. *c.* A bundle of seminal animalcules, as they are grouped together in the testicle.

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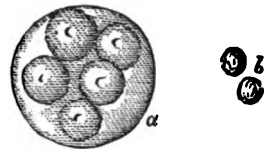
deferentia, up the spermatic cord, passes through the walls of the abdomen, and is received, with the prostatic fluid, according to the common belief, into the seminal vesicles, which are a reservoir in which it is retained, until expelled by the action of the proper muscular apparatus in the sexual orgasm.

The zoosperms retain their power of motion, under favorable circumstances, for hours, and even days after being ejected. In fish, which do not copulate, they swim about in the water, until they come in contact with the eggs spawned by the female. The ripe eggs may even be taken from the body of a female fish, and the melt, or testicle, from the male, and fecundation produced by mingling them together, and ponds and rivers may be stocked with fish by this mode of artificial impregnation.

Carried up the vagina in human generation, by the entrance of the penis, it is intended that the spermatic fluid should be thrown full into the mouth of the uterus, and then, by the contractions of that organ, forced up the fallopian tubes, toward the ovaries. But several circumstances may prevent this being accomplished. The male organ may be too short to reach the uterus; it may not, from

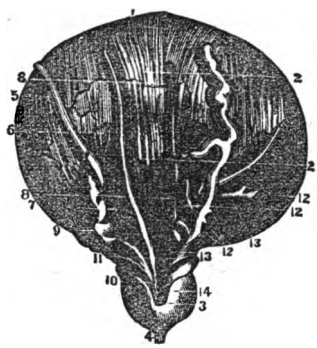
Fig. 29.



CYST OF EVOLUTION.

This figure is a remarkable view of a seminal cyst, or cell. *a*. Containing five smaller cells, in each of which may be perceived a nucleus. *b*. Two seminal granules; all highly magnified.

Fig. 30.



SEMINAL VESICLES.

1. The urinary bladder. 3. The prostate gland. 4. Membranous portion of the urethra. 5. The ureters. 7. The right vas deferens, which conveys the spermatic fluid from the testicle. 8. Left do. 9. The right seminal vesicle in its natural position. 11. Left seminal vesicle injected with wax, and dissected out. It will be seen that the seminal fluid, passing down the vasa deferentia, passes back into these vesicular pouches, as the bile does into the gall bladder, to be retained for use.

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some malformation, be even able to effect an entrance into the vagina, and still impregnation may take place; for the active zoosperms, swarming by millions, move every way with a rapid motion, and are often able to find their way through the entire length of vagina, uterus, and fallopian tubes. On the other hand, when the womb is too low, in the almost universal disease of prolapsus uteri, the head of the penis may pass by its neck, and the semen be ejected and lodged in a deep fold of the vagina. This appears to often prevent impregnation.

While the male testicles are engaged in the evolution of zoosperms, the ovaries of the female are no less active in forming and ripening the ova, which they may impregnate; but with this striking difference, that, while zoosperms are formed by millions, and may be ejected day after day, we have but one or two, or in rare cases, from three to five, ova perfected, once a month, excepting during gestation, and, normally, during lactation. The ovum, or egg, which, in all its essential parts, is precisely alike in all animals, and which consists of a cell, a nucleus, and a nucleolus, is found in the stroma or mass of the ovary.

It will be seen that conception can only take place under certain well-defined circumstances. First, there must be a ripened ovum, set free from its graafian vesicle. This condition exists, normally, after the period of puberty, and in all healthy persons is marked by the menstrual evacuation. The zoosperms may meet the ovum on its passage, or, possibly, the ovum may find the zoosperm awaiting its arrival.

But in the diseases and irregularities of our lives, with the excitements of stimulating food and general false habits, with the continual over-excitement and exercise of the generative organs, these processes become irregular, and their normal signs not to be depended on. Ova may be prematurely ripened by excitement of the ovaries, caused by sexual indulgence. The menstrual evacuation, which degenerates into a real hemorrhage, becomes irregular and uncertain, as well as depraved in its character.

Menstruation appears to be a throwing off of the fluids concerned in the ripening and expulsion of the ova. In a perfectly healthy state, the menstrual fluid of the female is about five ounces in quantity, and varies in disease or ill-health to suppression or hemorrhage, The mucous membrane of the uterus is thrown off monthly, congestion and flooding, or hemorrhage taking place, and its suppression or stoppage causing the many female ills.

In what manner the actual impregnation of the ovum takes place,

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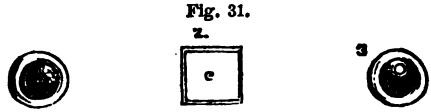
we have no positive knowledge. Microscopic observers assert that they have seen the zoosperm enter the ovum by an opening left for that purpose. It has even been fancied that the body and tail of the seminal animalcule form the rudiments of the brain and spinal cord! Observations of the progress of fetal development warrant no such conclusion. If it could be established, it would prove that the animal system of nerves was formed by the male parent, and the organic by the female. The resemblances of children to their parents, and all the phenomena of hereditary transmission of qualities, prove that both parents are concerned in the production of every part.

We have, then, two objects here of microscopic minuteness — small, almost to an infinitesimal degree — small, beyond our possible conceptions. One is the germinal point in the female ovum; the other is the zoosperm, or some portion of it. In each of these invisible atoms is comprised the elements of a glorious, and, as we believe, immortal being. Each contains, moreover, the rudiments of the very form and qualities of that being, physical, moral, and intellectual. There, in that point of matter, that pelucid cell, we have the shape and air, the talents and genius, the honesty or roguery, the pride or humility, the benevolence or selfishness of the future man. We have what determines the form of his head or hands, the contour of his nose and chin, the color of his eyes and hair. Moreover, this spermatic animalcule, or this cell-germ, has all hereditary idiosyncrasies and diseases, gout, scrofula, venereal taint, or insanity.

We can scarcely conceive of this, yet we must admit it. All the grand and energetic qualities that made a Cæsar or a Napoleon — all that can be fairly attributed to blood and birth, to hereditary influences, must have been contained in one or both these atoms.

I do not underrate the influences that may act upon the fetus during gestation. I give full credit to the power of education in forming

Fig. 31.



HUMAN OVA.

1, is a human ovum, magnified forty-five diameters, showing, near the center, the cicitricula. 2, is the germinal vesicle, placed within a square area, and magnified forty-five diameters. On one side is seen a small elevation. This is the germinal spot, the microscopic point, which is the real germ of the future man. 3, an ovum, so transparent that the germinal vesicle and spot may be seen shining through its envelopes.

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the human character; and I shall speak of both these influences; but I assert that all which makes the basis of the character, mental, and physical, must reside in the germ and the spermatozoon, and must combine at the moment of impregnation, or the union of these principles.

For, observe, all the qualities of soul and body, which make the specific differences between a mouse, a dog, a horse, an elephant, must be in their germinal principles. The appearance of the zoosperms in different animals varies slightly under the microscope — that of the ova scarcely at all. Moreover, when two nearly allied species of animals engender; when, for example, the zoosperm of the ass unites with the ovum of the mare, each parent is found to contribute to the mental and physical qualities of the offspring. In all crossings of different breeds of animals, we find the same effects produced, the more powerful impressing themselves most strongly, and the two sexes giving each certain peculiar characteristics.

Nor is this by any means less notably the fact in the human species. When sexual commerce takes place between a negro and a white woman, the offspring child partakes of the mental and physical qualities of both; which he has the most of, seems to depend upon the relative power and energy of his two procreators. The reader, thus directed, will find for himself abundant illustrations of the principles above stated, and which must not be lost sight of by any true philosopher.

If we do not understand the absolute process by which the union of the male and female elements is accomplished, in the generation of the new being, the conditions under which this must take place are more clear to us. From a multitude of observations, it appears,

That the ovum, in a state of healthy maturity, must have been set free from the ovary. This is not the case with some of the lower animals. There are insects in whom a single act of the male will fecundate successive generations. In birds, the male principle seems to be added before the egg is mature.

The sperma must be recent, and must contain living, active zoosperms.

The smallest quantity, and probably a single zoosperm, is sufficient, if it comes in contact with the ovum.

It is not necessary that there should be any enjoyment of coition on the part of the female. Women who have none, seem even more prolific than others. It may take place in sleep, or other insensibility. In men, also, the orgasm may be accompanied with no pleasure, and even with pain.

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CHAPTER XXX.

THE FETUS.

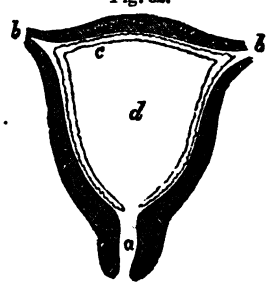
THE ovum once impregnated, Nature, by which I mean the informing soul that presides over the whole organic system, and gives intelligent guidance to every part, carries forward its development, as nearly as can be observed, in the following order: —

The ovum is, from the first, enveloped in two membranes, the outer of which is called the chorion, the inner the amnion. Within lies the principle of life, the germ of the complex being. The ova of all the higher animals are alike at this period, and one can not be distinguished from another. The amnion, or inner membrane, secretes upon its inner surface the liquid in which the fetus is suspended during the whole period of gestation. The chorion, or outer covering, on the other hand, acts outwardly, throwing out villi, which, gathered at one point, at a certain period, unite with vessels on the inner surface of the uterus, and form the placenta, or after-birth, by which the fetus is nourished from the blood of the mother.

This central germinal point, with its two coverings, form the three parts of a regular cell formation — cell, nucleus, and nucleolus.

While the ovum is gradually passing down the fallopian tube, propelled by the action of its ciliary bodies, a journey which lasts from eight to fourteen days, and in the course of which it is liable to impregnation, the uterus is preparing for its reception. A delicate secre-

Fig. 32.



SECTION OF THE UTERUS.

Fig 32 is a sectional plan of the uterus, about eight days after impregnation, showing: — *a*. The neck of the uterus. *b*, *b*. Entrances to the fallopian tubes. *c*. The decidua vera covering the walls of the uterus at every point. *d*. Cavity of the uterus.

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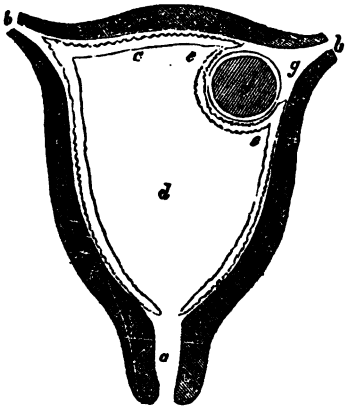
Fig. 33.



OVUM ENTERING THE UTERUS.

Plan of the uterus at the moment when the ovum, *f*, surrounded by its chorion, *g*, is entering its cavity, and pushing the decidua vera before it to form the decidua reflexa. *a*. Neck of the uterus. *b*, *b*. Entrance to the fallopian tubes. *c*. Decidua vera, covering the walls of the uterus at every point. *d*. Cavity of the uterus.

tion is poured out over its whole internal surface, which is organized into a membrane called the decidua; so that when the ovum arrives at the lower end of its fallopian tube, or one of the horns of the uterus, this decidua bars its entrance. But as the ovum is pushed forward, the membrane gives way, and is folded around the ovum, so as to make a double membrane. The outer portion is called the decidua vera, or true membrane; the inner, the decidua reflexa, or folded membrane.

We have the ovum now protected by no less than four membranes: two proper to itself, the amnion and chorion, and the two formed by the folded decidua of the uterus.

During its passage down the fallopian tube, the entire ovum is so small that it is with great difficulty it can be found by the closest inspection and the aid of a powerful microscope. When found, however, and subjected to a high magnifying power, it exhibits the same phenomena as is dis-

Fig. 34.

HUMAN OVUM.

Fig. 34 shows a perfectly normal human ovum, twenty-one days after impregnation, enclosed in its decidua. Size of nature.

Fig. 35.

HUMAN OVUM LAID OPEN.

Fig. 35 shows the same ovum, with the decidua laid open; the embryo, about two lines long, closely surrounded by the amnion, is seen through the division of the chorion.

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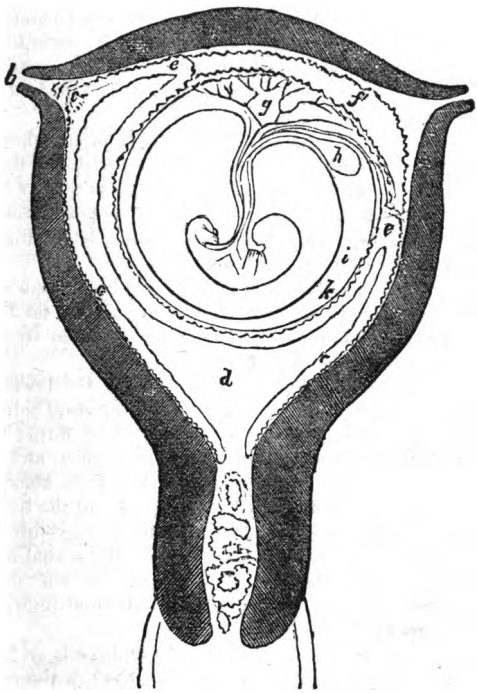
played in the incubation of any other egg. There is the yolk, the germinal spot, which gradually expands, and the formation, first of blood, and an external circulation, and then of the rudimental organs; but these latter changes take place in the uterus. In the tube the ovum gradually increases in size, and on arriving in the

Fig. 36.



FETUS IN UTERUS.

Sectional view of the uterus with the ovum further advanced; the cervix uteri is now plugged up with a gelatinous mass, *a*. The decidua vera, *c*, sends a process, c^2, into the right fallopian tube; the cavity of the uterus is almost completely occupied by the ovum. *e*, *e*. Points of reflexion of the decidua reflexa. *f*. Decidua serotina. *g*. Allantois. *h*. Umbilical vesicle, with its pedicle in the umbilical cord. *i*. Amnion. *k*. Chorion; between the two the space for the albumen.

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horn of the uterus, the ova of the rabbit are half to three quarters of a line in diameter, including, of course, its membraneous envelopments.

In the uterus, the growth of the new being is rapid. Still, in the human subject, up to the seventh day, nothing is visible to the naked eye. On the tenth day, there may be perceived a semi-transparent, grayish flake. On the twelfth there is a vesicle nearly of the size of a pea, filled with fluid, in the middle of which swims an opaque spot, presenting the first appearance of an embryo, which may be clearly seen as an oblong or curved body, according as it is viewed, and plainly visible to the naked eye on the fourteenth day. The entire weight of the embryo and its two investing membranes, waters, etc., is now about one grain.

The increase from the first is astonishingly rapid, when we consider its original minuteness. On the twenty-first day the embryo resembles an ant, or a lettuce seed; its length is four or five lines, and it weighs three or four grains. Many of its parts now begin to show themselves, especially the cartilaginous beginnings of the bones of the spinal column, the heart, brain, etc.

On the thirtieth day the embryo is as large as a horse-fly, and resembles a worm bent together. There are as yet no limbs, and the head is larger than the rest of the body. When stretched out the embryo is nearly half an inch long.

In the seventh week bone begins to form in the lower jaw and clavicle. Narrow streaks on each side of the vertebral column show the beginning of ribs; the heart is perfecting its form; the brain enlarged, and the eye and ear growing more perfect, and the limbs sprouting from the body. The lungs are mere sacs, about one line in length, and the trachea is a delicate thread, but the liver is very large. The arms are still imperforate. In the seventh week are formed the renal capsules and kidneys, and the sexual organs are speedily evolved, but the sex of the fetus is not determined until some time after. The embryo is now nine lines, or three fourths of an inch in length.

Fig. 37.

HUMAN EMBRYO.

In the eighth week the embryo is an inch long, weighs a dram, and begins to show the division of fingers and toes.

Human embryo of the eighth week. *a*, is the umbilical cord, cut. *b*. An umbilical hernia. *c*. The ear. The head is larger than the whole body, the limbs are short and the divisions of the fingers and toes but slightly indicated. The mouth is a large unformed opening, with the tongue hanging out.

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At from sixty to seventy days, the development is rapid, and all the parts are in the course of progressive formation. The eyes enlarge, the lids are visible, the nose grows prominent, the mouth enlarges, the external ear is formed, the brain is soft and pulpy, the neck well defined, and the heart fully developed.

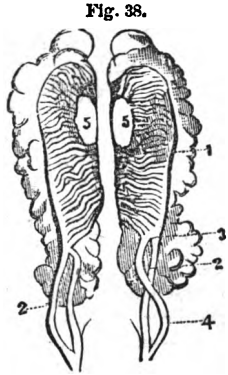
At three months, the eyelids are distinct, but shut, the lips are drawn together, the organs of generation very prominent in both sexes, both penis and clitoris being remarkably elongated. The heart beats with force, the larger vessels carry red blood, the fingers and toes are well defined, muscles begin to be developed, and the fetus is four or five inches in length, and weighs about two and a half ounces.

At four months it has greatly expanded in all its parts. The abdominal muscles are formed, and the intestines are no longer visible. At five months the lungs have increased, and are even susceptible of a slight dilatation. The skin is now in process of formation, the place of the nails is marked, and meconium gathers in the intestines, showing the action of excretory glands. Length, eight or ten inches; weight, fourteen or sixteen ounces.

At six months, a little down appears upon the head, the areolar tissue is abundant, and fat begins to be deposited. Length, nine to twelve inches; weight, one and a half to two pounds.

At seven months, every part has increased in volume and perfection; the bony system is nearly complete. Length, twelve to fourteen inches; weight, two and a half to three pounds. This is reckoned as the epoch of viability, or the period in which

Fig. 38.



CORPORA WOLFIANA.

The wolfian bodies are fetal organs, which are engaged in the important process of forming the kidneys and testicles. When this work is accomplished, these forming organs disappear. 1. Kidneys. 2. Ureters. 4. Excretory duct of the wolfian body. 5, 5. Testicles, which, after being formed here, beside the kidneys, descend, pass out by the same channels as are afterwards occupied by the spermatic cords, and are lodged in the scrotum. The ovaries are formed in the same manner, and at first the sex can not be distinguished. The clitoris is as large as the penis, and there is a cleft below in both sexes. In males, a seam or raphe shows the place of this cleft. In females, the ovaries remain attached to the uterus in the pelvis, and the cleft remains open.

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the fetus, if expelled from the uterus, is capable of independent existence.

From this period up to nine months, there is mere increase of size and action. The red blood circulates in the capillaries, and the skin performs the function of perspiration. Length, eighteen to twenty-two inches; weight from five to eight pounds.

There are cases in which an ill-nurtured fetus, at its full period, does not weigh more than two or three pounds; on the other hand, cases are not rare in which the weight is twelve or fifteen.

During the first weeks of the evolution of the embryo in the uterus, it is nourished, as the young chicken is, by the yolk of the egg. But soon the villi of the chorion gather into a compact mass, and become adherent to some portion of the uterus. There is formed thus a placenta, made of two portions, the maternal side, toward the walls of the uterus, and the fetal, in which the vessels unite into two arteries and one vein, which, with these envelopments, form the umbilical cord, and communicate with the fetal heart. By this means, at every pulsation of the heart, blood is sent through the two umbilical arteries to the placenta. Here the vessels branch out into capillaries, which mingle with those of the maternal placenta, communicating with the uterus. Through the membraneous coats of these vessels, the blood of the fetus is nourished and purified. It receives nutritious matter and oxygen; it gives out carbonic acid. The placenta answers for the fetus there, the double purpose of stomach and lungs. The fetus has its own individual circulation and life; but all its nutriment, from the time this connection is formed, until it is severed at birth, comes from the mother.

Fig. 39.

THE PLACENTA AND UMBILICAL CORD.

Showing the distribution of vessels on the fetal side of the placenta.

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CHAPTER XXXI.

PREGNANCY.

Signs of Pregnancy.—The cessation of menstruation at the usual period of its occurrence is among the first indications, though not in itself conclusive, of pregnancy. Most women experience some degree of nausea, and sometimes vomiting on rising, called morning sickness; this usually begins in the fifth or sixth week, and continues to the end of the third month. Salivation sometimes, though not often, attends. The breasts manifest an uneasy sensation of fullness about two months after conception; throbbing and tingling pains succeed, and they soon increase in size and firmness, become knotty, and the areola around the nipples darkens; these are the most unequivocal of all the signs of pregnancy. The enlargement of the abdomen is gradual from the first, although in some cases it becomes a little flatter for a month or two. Quickening occurs usually during the fourth month, after which the motions of the fetus are decisive.

Duration of Pregnancy.—The natural duration of pregnancy has usually been reckoned at nine calendar or ten lunar months, or two hundred and eighty days. A majority, probably, are born in the fortieth week; nearly as many in either the thirty-ninth or forty-first; many births take place in the thirty-eighth, forty-second, and forty-third weeks; and they are not very unfrequent in the thirty-seventh, forty-fourth, and forty-fifth weeks. The ordinary period seems, therefore, to range from two hundred and fifty-two to three hundred and sixteen days. The commencement of pregnancy is generally dated two weeks subsequent to the last appearance of menstruation; yet this calculation is liable to an error of between two and three weeks.

Extra-Uterine Pregnancy.—In some extraordinary instances, the precise causes of which we can never understand, the ovum is impregnated, and remains in the ovary, fallopian tube, or the interspace in the walls of the uterus. In all these cases the general signs of pregnancy are more or less apparent, while the enlargement of the abdomen is confined to one side, and

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develops very much like an ordinary tumor, with a sense of weight, uneasiness, heat, and pain. Sooner or later the cyst which incloses the fetal mass ruptures, the child dies, and the surrounding parts either accommodate themselves to their peculiar circumstances as well as may be, and allow the organic remains to occupy the part for an indefinite period, or make an effort to remove the fetus by the formation of an abscess opening externally, or a fistulous communication to the vagina or rectum, through which the osseous parts of the mass are discharged.

The practitioner must here restrict his or her duty to keeping the patient quiet, attending to the general health, especially keeping the stomach and bowels easy, and soothing all local inflammation, always recollecting that nature best accomplishes what she undertakes in her own way.

Superfetation. — The occurrence of a second conception before the termination of the first has been regarded as impossible by many authors; yet there are some well-authenticated cases on record. Sometimes both fetuses are fully developed, and the second born several months after the first; in other cases, one fetus is expelled in a half-formed or blighted condition. Practically, we are to regard the latter variety as a case of abortion.

CHAPTER XXXII.

GESTATION AND PARTURITION.

Dr. Nichols, an experienced and celebrated physician, writes: "It is as natural for a woman to have a child as it is for an apple-tree to bear apples, or any animal to bring forth its young." Travellers inform us that when Indian women, in their long marches, find labor approaching, they retire to some quiet place, by the side of a brook, alone, even amid the snows of winter, are there delivered, wash the child and themselves in the stream, and join the company again, and the march is delayed but half a day. This is natural childbirth.

In civilization, labor lasts from six to thirty-six hours, and a woman is kept in bed three or four weeks. Three women die every week, on an average, in New York city, from what are called the

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accidents of childbirth, while more than a thousand children a year are registered as still-born.

It is even believed, by many otherwise intelligent persons, that pain and danger are inseparable from childbirth, by the special edict of the Almighty. Every observer, however, knows the contrary of this; for there are millions of women on the earth, and always have been, whose labors have been safe and easy. I am prepared to show that childbirth is always so, just in proportion as the Laws of Health are obeyed. Just as life is natural, labor is natural; and a natural labor is not a painful or dangerous one.

The organic nerves, with which the uterus is supplied, are never sensitive in a healthy state. It is only in disease that they have pain. No natural process is painful. We might as well suppose that it would be painful to swallow with a healthy pharynx, or to digest with a healthy stomach, as to expel the fetus with a healthy uterus. All the pain, and difficulty, and danger of childbirth is the result of disease. Banish disease, and we rid ourselves of its consequences.

This is not mere theorizing. We have had many parturient patients. Some have been attended at their own dwellings; some have remained with us; some have had several children under our care. Just in proportion as these women have been healthy, or have become so under our treatment, their labors have been easy, and they have recovered quickly from their effects. In several of these cases, where previous labors had been long and severe, they have become short and easy. Under the best circumstances, these labors have not lasted more than fifteen minutes, and have been accomplished with no more than three or four contractions of the uterus, which, in some cases, were very little, and in others not at all, painful. One patient could not remember, a few hours after, whether she had any pain; another said the efforts were not disagreeable — she had rather have them than not. Surely this is better than to make women drunk on ether or chloroform.

The question of man-midwifery has been much discussed of late in this country. In fact, the custom of having men is confined to a recent period of time, and a small portion of even the civilized world. It was never known elsewhere. It is a question which, I think, women should decide. If they want men to attend them, they should have them; and the most proper man, I think, is the one a woman most wants — provided he knows how to give the requisite assistance. I hope to give here such instructions as will enable any man, or any woman, to do all that is required.

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The first thing to be learned in this matter is to fully realize what I have stated in the outset, that childbirth is a *natural process;* and however painful, or complicated, or dangerous it may be made by disease, still nature must do the work. Our efforts to assist nature, to expedite her operations, or to take her own work out of her hands, all end in mischief. The only cases in which we are justified in interfering, is where her powers are exhausted, or some malformation or malpresentation renders all her efforts unavailing. These are rare accidents, and always the result of disease; how rare, even amid all the vices of civilization, is shown by the following statistics: —

Of twelve thousand six hundred and five deliveries at the Maternity Hospital in Paris, only one hundred and seventy-eight required assistance; and instruments were used in only thirty-seven cases! Yet we have fashionable doctors in New York who give ergot, and use the forceps, in a large proportion of the cases to which they are called. The consequences are, prostration, hemorrhage, prolapsus, and long-continued uterine, and general disease. But the common practice of medicine, discarding all trust in nature, and relying on drugs and instruments, is full of such horrors, and the world is full of victims. I work in the earnest hope that I may somewhat diminish the number.

When a woman, fully developed in mind and body, has that love for some man which makes her desire a union which will naturally result in the production of offspring, she owes it to herself, her husband, her child, and all the possible generations of her posterity, to prepare herself, in the best manner, for the enjoyments of love and the functions of maternity. To neglect this is a crime no punishment can atone for, a sin no repentance can wash away.

The marriage-bed should be a shrine of health and happiness — never the receptacle of disease and suffering. It should be a heaven of mutual love — never a hell of indifference, disgust, and hatred. Yet the world is full of children born of the indifference, disgusts, and hatreds of what civilized law and Christian morality call marriage!

One who is to be a bride, and who hopes to be a mother, then, should observe all the conditions of health; and if suffering from any disease, or in the practice of any diseasing habit, she must lose no time in seeking reformation and cure. But when she has reason, according to the rules I have given in treating of the generative function, to expect that the embraces of the man she loves will produce pregnancy, she has many motives to be true to herself and to

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the laws which God has impressed upon her constitution. Let her be calm, temperate, and happy. Let her guard against amative excess. Especially in the honeymoon, love runs into absorption and exhaustion; and permanent happiness is sacrificed to a few days of delirious and not very satisfying enjoyment. The tone of the uterine system is relaxed by this excess; the germ is weakened; the spermatic fluid is exhausted of its vital qualities; and the result is, a sickly, nervous pregnancy, a protracted and painful parturition, and a sickly, short-lived infant.

Begin right, then, with temperance, as the best conservator of health and pleasure; and were there no motive but the preservation of your beauty and attractive charms, so as to keep the love of your husband, that alone should be sufficient. But the woman who has the joys of a mother in prospective has holier motives to perform her duty.

When a woman finds herself pregnant, she should double her care and diligence. I have very strongly expressed the belief that in this state no strength should be expended in sexual intercourse. "When pregnancy exists," says a distinguished physiologist, "every wish is consummated; satisfied with her work, Nature immediately robs woman of her charms, and of that attraction which brings man toward her." The husband now folds his arms around her with a respectful tenderness and a protective love; but he is no longer attracted to her by amorous desires; and every time he excites in her the sexual passion, he robs his child of some portion of its vitality, and his wife of some of the strength she needs to sustain her.

During pregnancy, while a new and powerful action is going on in the uterus, — the evolution of a new being, — less strength remains to the rest of the system. The stomach has less power of digestion, from which come nausea and vomitings; consequently the food must be more than ever sparing, and of a pure quality. Low spirits and hysterical feelings arise from the limited supply of vital power to the brain. The pregnant woman needs general measures of invigoration, the full morning bath, gentle frictions, etc. She may also require that her bowels move regular. She must take daily exercise in the open air to a moderate extent, never so as to induce great fatigue; she must live in a cool, pure atmosphere, and sleep, and dress, and eat accordingly. Above all, let her diet be pure. Let not the delicate tissues of the unborn child be made up of trash. And let not its delicate brain and nerves be poisoned with coffee, alcohol, or tobacco. Avoid also all the poison of drugs. An infinitesimal embryo may possibly be poisoned by homœopathic

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doses. The fussings and physic, bleedings and dosings which some doctors keep up, during the whole period of pregnancy, seriously injure both mother and child.

If these directions are followed, there need be no apprehension of the abortion of a tolerably healthy fetus by a tolerably healthy mother. But some imprudence, excitement, or exhaustion may produce it, in a delicate constitution, especially when abortions have occurred before.

The symptoms of approaching abortion are pain and irregular action in the neighboring parts, hemorrhage, paroxysms of pain in the back and uterus, a feeling of weight, tenesmus, the descent of the uterus, and opening of its mouth. Often these are preceded by signs of the death of the fetus. These are a sudden cessation of the morning sickness where that exists, or of other sympathetic symptoms, as they are called. The breasts become flaccid; the motion of the child, if already perceived, ceases, and a feeling of heaviness takes its place.

Fig 40.

Uterus laid open, showing the natural position of the fetus at the full period.

Whenever signs of the death of the fetus show themselves, we must prepare for abortion. When there are signs of abortion, and we wish to prevent it, we use precisely the same treatment. In each case, our effort is to strengthen the nervous power, and proper action of the part; and what will save the child, when it can be saved, will aid its safe expulsion, when its loss is inevitable.

This treatment consists of cold sitz-baths, and the use of the vagina syringe; the wet bandage, wet-sheet packs, rest, and strict diet, until the danger is over. The expulsion of both fetus and afterbirth require little interference, if small — if in an advanced stage, we proceed, in all respects, as with a common labor.

When the full period of pregnancy has elapsed, and all the usual

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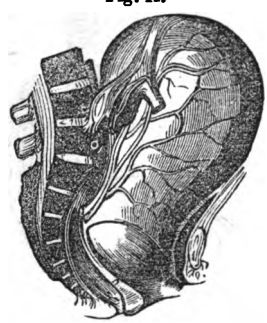
maternal preparations have been made for the expected, and, it is to be hoped, much wished for stranger, signs of labor make their appearance.

The uterus contracts itself, and prepares for the grand effort of expulsion. In this way it settles lower down, the abdomen is smaller, and the breathing more free. With this there comes such a feeling of strength and lightness to the patient, that if not cautioned, she will start off on some long, exhausting walk, instead of saving her strength. The mouth of the womb begins to dilate, as well as the vagina. There is a disposition to evacuate the bladder and rectum with unusual frequency. Sometimes there is chill or tremor at the beginning. The preparatory processes are accompanied with the exudation of a glairy mucus, which continues during the whole process.

When the labor is painful, it is divided into two stages — the pains of dilatation and those of expulsion. But both processes may take place with little or no pain. At first, the efforts occur at long intervals; the pain is in the small of the back. They are sharp, grinding pains, and seem, as the patient says, to do no good. But after the mouth of the uterus is dilated, the action changes. The body of the uterus contracts with all its fibers, and with wonderful force. This action is quite involuntary, and may occur even after apparent death. But the patient endeavors to assist, and probably does assist the expulsive effort, by holding her breath and bearing down with the muscles of the thorax and abdomen.

Fig. 41.



Gravid uterus, with the bag of waters protruding into the vagina.

At first, the membranes, filled with the amniotic fluid, press through the mouth of the uterus, and aid in its expansion. As the pressure increases, the membranes break, and the waters gush out. The uterus, suddenly contracting, seems to gather new force, and the fetus is pressed rapidly forward.

In a vast majority of cases, we find the head presenting, with the face downward, so that the crown of the head is first born. In a few cases the face is upward, and born first. In very rare cases, the

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feet or the breech present. In still more rare ones, we may have an arm, or shoulder, or any part of the body.

Professional assistance, in average cases of natural labor, with directions for any probable contingencies, are given below.

When called to a patient, the first object is to establish with her that degree of friendly and familiar confidence which will make the aid agreeable. This is very necessary; and the want of it may make the labor more protracted and severe.

The next point is to ascertain whether labor has commenced; for we have sometimes false alarms, which pass off a fortnight before labor begins. If the pains are irregular, and accompany some disturbance of the bowels, or do not go on with progressive force

Fig. 42.

Successive positions of the head in the most frequent presentations, the face to the sacrum.

Fig. 43.

Successive positions in birth when the face presents anteriorly.

and rapidity, let the patient take a cold sitz-bath. This will be likely, if they are not labor pains, to send them off entirely. When it is an object to know if labor has begun, it may be ascertained with a considerable degree of certainty by an examination.

Never propose an examination when it can be well avoided; and prefer, if possible, to wait until the patient demands it, as she does when she grows anxious about the progress of the labor. When necessary to be made, prefer that the patient lie on her back, with her knees drawn up a little. Then, sitting by the side of the bed, turn up the cuffs, moisten or oil the forefinger of the hand nearest

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her, and, passing it under the bedclothes, carefully and delicately move it along the thigh, separate the labia, pass the finger up the vagina, find the mouth of the uterus, and feel if it is expanded. If the neck of the uterus is quite gone, and its mouth expanded to the size of even a shilling piece, conclude that labor is well begun. It is best to introduce the finger during a pain, as the patient will bear it better, and to wait until the pain has ceased, the better to find the amount of expansion

Satisfied that labor has really begun, see that proper preparations have been made. The room should be cool, airy, and quiet. I prefer but one or two assistants, and should wish never to have a professional nurse, bigoted in the notions of the old school of practice. Any sensible servant or friend, who will follow directions, is better than these fussy, important persons. The bed should be hard, and protected from injury by a covering of oil-cloth, India-rubber cloth, or blankets and sheets. Have several towels, a long towel, or abdominal bandage, water to wash the hands, and to use for injections, etc., a good vagina syringe, which put in order, so that it will work easily, and perfectly fill, a sharp pair of scissors, and two strong ligatures. When everything is in order and going on properly, if the labor is to last some hours, walk about, and take it easy. Why not? It is impossible to hurry matters; or, if possible, very wrong. Nature takes just as much time as is needful. There is no better economist. It is not very likely that she knows how to make a beautiful live baby, and don't know how to "born it." I feel a perfect confidence in her powers, and let the patient see that I do. Generally the time of birth can be fixed, and I have done so often, within five minutes by the watch. But be careful not to promise too much.

At an early stage of labor the bowels should be moved freely, and an opportunity given the patient to urinate often. During the dilating pains, no support can be of much service; but after the regular bearing-down pains have set in, a bandage put around the loins, and held firmly by an assistant at each pain, sometimes is a great relief.

The position is of little consequence. Some ladies like to sit in a chair; some walk about the room, and stand, sit, or kneel at each pain, holding on by whatever is handy; some lie on the side to be delivered, and some on the back. Some prefer to be delivered on their knees, and it proves a very convenient way. I prefer that the patient should lie on her back, with her right side toward me. The clothing should be such as not to be in the way, and to be easily removed.

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As the pains become more frequent and more severe, the patient and friends grow anxious to know if all is right, when make another examination. If the weather is warm, I beg leave to remove my coat; but if the room is cool, or the people particular, I ask some one to pin a napkin around my arms, to protect the sleeves. With this precaution, I make an examination during a pain, and find the bag of waters protruding, and by waiting until the pain has passed off, and the pressure is diminished, I am able to distinguish the presenting part; the head by its hardness and rotundity, or the breech by its softness and shape. I am able to assure the patient that all is right, if I find it so; and I have seldom found it otherwise in a healthy patient.

When the increased frequency of the pains and force of the contractions, with sturdy downward efforts on the part of the patient, show that the end is near, I stay by; and when I hear the gush of waters, from the breaking of the membranes, I am ready to receive the head of the child. It may not come; but I find at the next effort where it is. Generally it comes down to the external orifice, and nothing is wanting but the dilatation of the perineum.

Now, if the head is large, birth, to one unaccustomed to it, would seem impossible. There is a great bulging tumor, and at the upper part, the external orifice of the vagina, nearly as small as ever. If the efforts are very energetic, I involuntarily try to protect the perineum from rupture, by holding my hand so as to restrain a little the forward pressure. There has been much dispute about the use of this, and I have seldom thought it needed; but in two or three cases I have resorted to it, from an apparent necessity.

Suddenly, the head emerges, — comes out like a shot, — and the patient feels a sensible relief; perhaps a thrill of delight, at the first cry of her child. The whole body may follow at once, or there may be the usual pause, and the body, turning sidewise, is expelled by another contraction. The child is born. Lay it on the right side, see that its face is free, and that fresh air comes to it. Hold the umbilical cord between the thumb and finger of the left hand, so as to feel its pulsations. When it has done pulsating, or as soon as the child is crying lustily, take a ligature and tie it tightly and firmly an inch and a half from the abdomen. Then the other, and tie that an inch further. This last is not absolutely necessary. Then, taking the scissors, and seeing that there are no little toes or fingers in the way, cut between the ligatures, lay the child on a soft cloth prepared to receive it, and hand it to the nurse.

If there is any delay in the child's breathing after birth, let the

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cool air come upon its skin, which is the natural excitant of respiration; or blow a sudden puff of air on its face and chest; or sprinkle them with cold water; or wet them. If these do not answer, hold the nose, and inflate the lungs by blowing into the mouth, and then pressing the air out. This may be kept up for an hour; for children have so been recovered. In these cases it is thought best to lay the babe on its right side, to favor the closure of the *foramen ovale*.

Now, or while this was doing, pass the hand under the cloths upon the abdomen of the mother, to see, first, if there is another child; secondly, if the afterbirth has been expelled from the uterus; and, thirdly, if that organ is contracting as it ought. Often the placenta is thrown into the vagina. If so, it may be easily drawn out by a slight traction on the cord, aided by the partial or entire introduction of the hand beneath it. In any case, as soon as ascertained that there is not another child to be delivered, lay a towel, wrung out of cold water, on the abdomen. This assists in the contraction of the uterus, helps to throw off the placenta, if still adherent, and to expel it, and is a safeguard against hemorrhage.

Prefer, if possible, to end the labor at once, by the delivery of the afterbirth; but this must not be done bunglingly, and unless one feels quite sure, it had better not be attempted. It will generally come away in half an hour. When the delivery is complete, take the vagina syringe and throw a pint and a half of tepid water full and far up the vagina; and if contraction has not taken place, so as to prevent it, into the uterus. This will give immediate relief; and in almost every case the patient draws a long breath, and exclaims, "O, how good that feels!" Next, the soiled clothes around her are to be removed, and warm bandages pinned closely around the abdomen. Some give a sitz-bath, but I prefer, just now, the horizontal position, in all delicate cases. Then her clothing is to be removed; she is to be washed all over; have clean clothes put on; removed to the nice side of the bed, by being carefully lifted over; a wet cloth is to be laid upon the parts with a dry one over it, and the babe given her to nurse. Leave her to rest and sleep, without eating, directing that, when she wakes, she shall be helped into a sitz-bath by the bedside; sit there five minutes; be washed all over; use the vagina syringe, and have a fresh bandage put around her, and then have some breakfast; a little brown wheat-bread toast, or some wheaten grits; a cup of milk, and a little nice fruit, or something equally good. She is now to take two sitz-baths a day, one full bath, have the bandage renewed two or three times, and use the vagina syringe at least four times a day. A tolerably healthy woman

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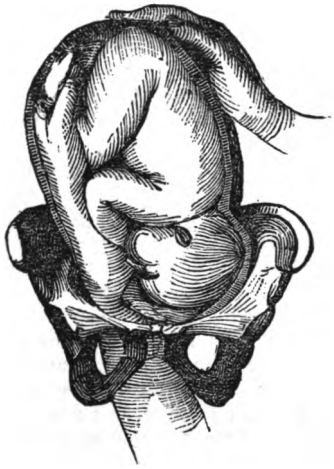
will be able to take her baths the second day without assistance; and be round the house on the third day, and to go out on the fourth or fifth. Still, when there is no necessity, it is better to keep quiet a little longer.

Such is the best treatment, and the water-cure practice in ordinary childbirth; but we have many cases of women of good constitutions, who have been faithful in their preparatory treatment, whose labors are over in less than an hour, without the least trouble, and who might be round the next day, if they chose, carrying their babies. Water-cure, in all cases of childbirth, in fact, brings to women the strength and power of their natural condition. There are women who are shocked at the indelicacy and want of refinement shown in these easy labors; such ought to have the privilege of suffering as much as their sense of delicacy and ideas of refinement require.

Fig. 44.



THE OPERATION OF TURNING.

There are a few points connected with unnatural labors, which require some notice.

When there is a breech presentation, there is usually no difficulty; for the breech and thighs are scarcely as large as the head; but if there is much delay, it is best to bring down the legs, which may be done by passing the hand up in the interval of the pains, seizing the feet and bringing them down, when the whole body will soon follow. We must now attend to the umbilical cord, and see that it is pulled down, so as not to strain it. When all but the head is delivered, we may bring down the arms, and the head will soon be born. We may even carefully assist in the operation, and if there is delay we may hasten the uterine contractions by laying a cold, wet cloth on the abdomen.

In all other presentations than those of the head, breech, and feet, we may assist nature by turning the child, and bringing down the feet. No direction is required for this, but the very evident one

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that they must be brought so as to bend the body of the child forward, and not backward.

When the presentation is natural, and the pelvis not much deformed, if the labor is slow, we have nothing to do but wait. Labors may last twenty-four hours, thirty-six hours, forty-eight hours, and yet mother and child do well. We must trust to nature, and wait. We are not to give medicines, or apply instruments, until nature fails. The patient will seem utterly exhausted; but after resting a while, the efforts begin again, and seem as strong as ever. She declares that she *must* die; but she does not. No woman dies of the mere effort and pain of labor. Children are born with their heads mashed out of all shape, by the smallness of the pelvis, but they soon come right again.

There are some cases in which art must interfere — where the pelvis is too small to permit the birth of the child, when the uterus is exhausted, when there is hemorrhage that threatens life, and when there are convulsions. In these cases send for the best surgeon accoucheur to be had; but these cases are very rare.

Sometimes hemorrhage occurs at the beginning of labor, from the placenta being over the mouth of the uterus. Such a case may happen once in a thousand times. When it does, we must, as soon as possible, dilate the mouth of the uterus, introduce the hand, separate the placenta from the womb, bring down the feet, and deliver the child.

When hemorrhage occurs after delivery, from retention or partial adhesion of the placenta, we must deliver it by introducing the hand, guided by the cord, first removing the clots of blood. This operation, with the application of the cold compress to the abdomen, the use of the vagina syringe, and the wet bandage, with a compress under it, will cause the uterus to contract and the hemorrhage to cease.

The signs of internal hemorrhage are great chilliness, bloodless lips, a small, quick pulse, and faintness. The uterus may be felt — a large, irregular mass. We shall find it filled with clotted blood, and the afterbirth, which must be removed.

It is useless to give directions for the use of instruments — I have only to say that they are only to be resorted to in case of imperious necessity, to save the life of mother and child, if possible; the mother alone, if there must be a choice; or the child, if the mother can not be saved. Dr. Dewees, in the course of his practice in Philadelphia, had three thousand labor cases, and was never obliged to destroy the life of a child. One of our fashionable malaperts, in the same practice, would have killed scores.

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In all cases of labor of moderate duration, it is better for the patient not to eat, but be content with an occasional draught of water. When all the power of the system is, or should be, in the uterus, the stomach can not digest. When food has been taken shortly before labor, it is generally vomited.

In summer, if the water at hand is not very cold, we should have ice to cool it, in case of need.

All attempts to dilate the vagina are irritating, and full of mischief, and are only made in good faith by the most utterly ignorant. Still there are plenty of quacks who sit by the bedside, with the hand in the vagina, pretending to "help" the patient. I have had women angry, because I would not practice this indecent humbug.

When the pains grow slack and irregular, a cold sitz-bath of ten minutes first quite suspends them for a short period, and then causes them to come on strong and regular. In a long labor, a sitz-bath may be given every four or five hours, with decided advantage.

Where the external parts dilate slowly, the patient had better be discouraged from all voluntary efforts, leaving the downward pressure entirely to the action of the uterus.

We avoid pulling hard on the navel-string, or any forcible extrication of the placenta, for fear of turning the uterus wrong side outward — an accident which has sometimes occurred from much violence, and which, if not remedied at once by the restoration of the organ to its right position, soon becomes impossible to remedy.

If there is any delay in the expulsion of the placenta, placing the child to the breast is one of the best means of bringing on the necessary contractions.

After-pains often occur in a healthy uterus. They are the efforts at a full contraction, and are sometimes caused or aggravated by portions of the membranes, or clots, remaining in the uterus.

A cleansing discharge, called the lochia, is kept up for ten or twelve days after delivery, in the common practice. In that I have given, it is over in four or five.

Management of Infants. — When the nurse takes the infant, it is covered with a slimy matter, with more or less of a whitish substance, not easy to remove. Some babies are much cleaner than others, but all need a pretty thorough washing. The water should be nearly blood-warm; and it is best to rub the skin all over, first, with some soft sweet oil, especially in the folds of the skin. Wash them with some fine delicate soap and water, taking great care not to get the soap-suds into the eyes.

The next thing is the dressing of the navel-string. Take a piece of

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old, fine, soft linen, fold it so as to make a piece as large as the palm of your hand, of four thicknesses, tear or cut a hole through the middle, so as to draw the navel-string through it. Put a thin linen bandage over all, to keep it in place.

Now Mr. Baby is ready to be dressed. Its clothes must be in every respect comfortable; neither tight enough to impede respiration, nor long enough to prevent its kicking about. Its arms and neck should be covered, as well as its legs. The diaper should be loose, so as not to chafe, and pinned with a patent safety pin. Most poor babies are strangled, and fettered, and frozen with their clothes.

A babe wants three things — warmth, food, and sleep. It is not to be chilled with cold water or cold air; few civilized babies can bear either. The air it breathes should be cool and pure; but there is no sense in freezing a child. It is best to accustom it to cold by degrees. For the first month let it be washed in water at 80° or 85°; the second it may be 70°, the third 60°, and after that it may take its chance.

Our practice has been to use the cool or cold bath, given quickly, in the morning, for invigoration; and a tepid one at night, with a more thorough washing, for cleanliness. The nurse should be careful to wash all the folds of the skin, and in girls the private parts; and if the skin chafes, use a little sweet oil, or fresh butter, or sweet cream.

A child should have a motion of the bowels soon after birth. If it does not have one within twelve hours, an injection of tepid water should be given, with a little syringe, holding one or two ounces. And whenever, at any time, the bowels do not act regularly, or whenever there are signs of pain in the abdomen, the first thing done should be to give injections until the bowels are moved; and the next, to put around a wet bandage. Rubbing the bowels gently with the hand is also very good.

The navel-string shrivels up and comes off in five or six days. Scrofulous children are apt to have an open or even an ulcerated umbilicus. The application of the wet compress rather increases this action, by exciting the part. It is "too drawing." It is better to dress the part with a rag, covered with a little oil, or simple cerate, made of oil and wax.

Sometimes the breast of the mother is gushing with milk when her child is born; at others it does not come for hours. Nothing helps more to bring it than the sucking of the child. It may also be promoted by bathing in cold water, and wearing the wet com-

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press. Let it be remembered that cold water assists action everywhere, while warm water weakens. If you wish to prevent the flow of milk, bathe in warm water.

Leave the child twenty-four hours to get his breakfast. He will not suffer in that time; but if he does not get any then, it may be well to feed him. And the proper artificial food for a new-born infant is two thirds cow's milk, one third water, and a very little sugar. This is better than any pap, being a close imitation of the natural article.

A sick or scrofulous woman should not think of nursing her child. And food prepared as above is better than the milk of ninety-nine hired wet nurses in a hundred. When you find a woman as healthy and with as good habits as a cow, you can let her nurse your child. Still, there is an undoubted advantage in following nature. Every mother ought to nurse her own child, if she is fit to do it; and no woman is fit to have a child who is not fit to nurse it. But our life is a choice of evils.

How often must an infant nurse, or be fed? Some say, as often as they like. Some children nurse all the time they are not asleep. But many children are born with dyspepsia and morbid appetites. Whenever a child vomits, it has taken too much. When a new-born infant is fed, it may take three table-spoonfuls. Once in two hours is often enough the first month, and not in an unlimited quantity either; the second month once in three hours; the third once in four. By the time a child is a year old, it should take its three meals a day, and never eat between meals. The milk may be warmed, but not boiled. For the first year a child wants no food but milk. The second it may have with it a little farinacea — brown wheat bread, and ripe, pulpy, or sweet, juicy fruit, as strawberries, raspberries, peaches, etc.

There is no way to secure the perfect health, beauty, and regular development of a child, like entire simplicity and regularity in its diet. It should not know there is an unwholesome dainty in the world. Bread, milk, fruit, etc., are the food of infancy. I do not object to a reasonable variety, after a child has got its full set of teeth; but to candies, cake, pastry, and other breeders of dyspepsia.

A child should have its daily exercise in the open air, at least after it is a month old; and it should never have its face covered, night or day, so that it can not breathe freely. The lungs and blood of a child need pure air, as well as those of a grown person.

A healthy child has no trouble in teething. When there is any fever, it is easily controlled by diminishing its food, giving it cold

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water to drink, and putting a wet bandage around it, or moving its bowels, if need be. If the gums are inflamed, rub them with cold water — let it suck a rag dipped in water, or a little bag of ice.

If you can be sure of decently healthy vaccine virus, have your child vaccinated.

Wean at a year old, or as soon as a child has teeth enough to make a good beginning at mastication. If the mother's health suffers from nursing, it is better to wean earlier.

When the second set of teeth come to replace the first, great care should be taken, in children not entirely healthy, to avoid any disagreeable irregularities, by pulling such of the first set as are loose, so as to make way for the permanent teeth.

Education is a process that begins at birth and goes on till death. Life is a school for the soul's development. Education, in a true sense, is integral development; the strengthening and happy exercise of every power and faculty of body and mind. The stimulation and exercise of a few powers of the mind, to the neglect of all the rest of the system, mental and physical, is a false and mischievous system; full of evils to the individual and the race.

I have given an idea of what I mean by the true development and life of man. Education should assist that development, and be a training for that life. Our present systems and courses of education, in families, schools, and colleges, compare well with all systems of life in civilization. One is as false as the other. The young ladies' boarding-school is no more artificial, false, and ridiculous, than the fashionable life in what is called society, for which it is the preparation; and our colleges are just as well suited to the training of men, as these are to the development of women.

I hope that a time is coming when men and women, from their birth, will have some chance for a free and true development of what is noble in humanity. I have given here my idea of the nature and relations of man. To his social relations I have only alluded.

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PART III.

CHAPTER XXXIII.

PHARMACY AND DISPENSATORY.

We name in this chapter, Remedies, with instructions best adapted to family and home use, for complaints as they ordinarily exist. In all chronic, seated, or lingering complaints, see remarks in the several concluding chapters of this portion of our work.

Pharmacy may be defined that branch of medical science which teaches the art of preparing and combining remedies for the treatment of diseases.

We wish every one to be deeply impressed with this sacred maxim in physic, that the virtue of a medicine consists wholly in the skill of its application; and that the best and most salutary medicine, if injudiciously administered, may prove injurious.

Table of Doses.—As a general rule, the following table of doses will be quite sufficient; but much must always be left to the judgment of the prescriber, who alone can judge of the constitution and state of the case:—

A person from fourteen to twenty years of age may take two thirds of a dose intended for an adult; from nine to fourteen, one half; from six to nine, one third; from four to six, one fourth; from two to four, one sixth; from one to two, one tenth; below one year, a twelfth. A woman generally should take a little less than a man.

Apothecaries' Weight.—A pound contains twelve ounces; an ounce, eight drachms; a drachm, three scruples; a scruple, twenty grains.

Measure for Liquids.—A pint contains sixteen ounces; an ounce, eight drachms; a table-spoonful is about half an ounce; a tea-spoonful is one fourth of a table-spoonful; sixty drops make one tea-spoonful.

Some substances are administered in their natural state; others previously undergo various preparations. *Every article used in medicine should be collected in the right season, and be free as possible from impurities.*

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The articles of the materia medica, in their natural state, are generally unfit for medicinal use; and their remedial powers are often increased by combining two or more together; hence the necessity of preparation and composition.

Our different medicinal preparations are arranged under the following heads: —

1. Balsams.	11. Injections.	21. Salves.
2. Bitters.	12. Liniments.	22. Syrups.
3. Caustics.	13. Liquids.	23. Spirits.
4. Drops.	14. Mucilages.	24. Draughts.
5. Decoctions.	15. Oils.	25. Tinctures.
6. Extracts.	16. Ointments.	26. Essences. [itories.
7. Eye-waters.	17. Plasters.	27. Troches or Suppos-
8. Fomentations.	18. Poultices.	28. Washes.
9. Gargles.	19. Pills.	29. Mixtures.
10. Infusions.	20. Powders.	30. Electuaries.

1. **Balsams.** — By balsams is generally understood the concrete or inspissated juice of vegetables, such as balsam of fir, copaiba, etc. But we make use of the term here to designate certain artificial preparations, which, as regards qualities or consistence, resemble balsams.

PULMONIC OR PULMONARY BALSAM.

Take of Spikenard root	1 ounce.
Hoarhound tops	"
Elecampane root	"
Cumfrey root	"
Blood-root	"

Add a suitable quantity of water; boil, and pour off the infusion repeatedly, until the strength is all extracted; then strain; add to the same one gill of spirits, press and strain, reduce the whole of the liquid down to about one quart bottle full; then add two pounds of white sugar, and boil a few minutes, to form a syrup. Let the whole stand twenty-four hours, in order that it may settle — then bottle for use.

Dose. — A wine-glassful three or four times a day.

Use. — This preparation is highly useful in the treatment of *pulmonary affections* and *coughs* of long standing. It is admirably calculated to relieve that constricted state of the lungs which is often met with in consumption, and to assist expectoration. It does not increase the circulation, and is, therefore, a safe remedy in any stage of consumption.

2. **Bitters.** — By this class of medicines is understood certain liquids, as wine or spirits, impregnated with those vegetables

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which contain the greatest quantity of the bitter principle, such as gentian, centaury, etc. They are used to impart tone to the stomach.

WINE BITTERS.

Take of Golden seal	1	drachm.
White-wood bark	1	"
Indian hemp	4	"
Cayenne pepper	½	"

Bruise all, and add one quart of wine.

Dose. — From a table-spoonful to a wine-glassful three times a day.

Use. — This forms a useful tonic and pleasant bitter. It is administered in dyspepsia and other complaints, where tonics are indicated.

COMPOUND BITTERS.

Take of Tamarack bark	6	pounds.
Prickly-ash bark	4	"
Wild cherry bark	3	"
Seneca snake-root	3	"
Tansy	1	"
Socotrine aloes	½	"

Let these articles be pulverized and mixed; then take of mixture one quarter of a pound, add three pints of boiling water, two quarts of Holland gin, and one pint of molasses: let it stand a week.

Dose. — Half a wine-glassful morning, noon, and evening.

Use. — This forms an excellent tonic for dyspepsia, obstruction of the menses, and other diseases, where tonics are required. It constitutes old Dr. Bones's bitters.

RESTORATIVE WINE BITTERS.

Take of Comfrey root	1	ounce.
Solomon's seal	1	"
Spikenard root	1	"
Colombo root	½	"
Gentian root	½	"
Chamomile flowers	½	"

Bruise all together, cover with boiling water, and then add four quarts of wine or metheglin.

Dose. — Half a wine-glassful three or four times a day.

Use. — This is a very useful *tonic* in all cases of debility, particularly that peculiar to females. It is *pectoral* and *corroborant*. It is valuable in fluor albus and incipient consumption. Seldom or never given without benefit.

3. **Caustics or Escharotics.** — Caustics and escharotics are those substances which, when applied to fungous flesh or the skin, disorganize the same. Their operation, however, dif-

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fers very much, according to the agents employed, some acting very mildly, others very severely.

VEGETABLE CAUSTIC. — Make a strong ley of hickory or oak ashes, put it into an iron kettle, and evaporate till dry; pulverize, and preserve it in closed vessels.

Use. — This caustic is highly useful in the treatment of fistulas; also in indolent ulcers of every character. It removes fungous flesh without exciting any inflammation, and acts but little, except on spongy or soft flesh. It is useful in cancers, and in every case where a caustic is required.

EXTRACT OF BLOOD-ROOT. — This article, applied, on lint, to some species of ulcers, proves very beneficial.

4. **Drops.** — Drops include medicines which, from their strength or active properties, require to be given in very minute doses, the dose being usually graduated by the number to be administered.

Great care or caution is necessary in giving this class of medicine, as mistakes are more liable to be made in this than in some other forms.

Vials containing drops should aways be kept corked, that the strength may not be increased by evaporation, or the virtues of them lost.

DIURETIC DROPS.

Take of	Sweet spirits of niter	2 ounces.
	Balsam of copaiba	1 "
	Oil of almonds	2 "
	Spirits of turpentine	1 "

Mix these together, and add one scruple of camphor.

Dose. — A small tea-spoonful, given in mucilage of gum Arabic or herb tea, three or four times a day.

Use. — The drops are successfully administered in cases of scalding of urine, whether arising from syphilitic or other complaints. In inflammation of the kidneys they give prompt relief.

BLACK DROP. — The black drop was originally prepared, upward of one hundred years ago, by Ewd. Toustall, a practitioner, of the Society of Friends, in England. The recipe passed into the hands of a relative, and was finally published.

Take of	Opium	½ pound.
	Vinegar	3 pints.
	Nutmeg	1½ ounces.
	Saffron	½ "

Boil a while, and then add a quarter of a pound of loaf sugar and two table-spoonfuls of yeast; set the whole in a warm place for four or five weeks; decant, and bottle for use.

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Dose. — From fifteen to fifty drops.

Use. — This, perhaps, is the best form in which opium can be administered as an anodyne. It is given in all cases when an anodyne is indicated.

COUGH DROPS.

Take Oil of anise . . . . . ½ drachm.
Oil of almonds . . . . . ½ "
Balsam of fir . . . . . ½ "
Tincture balsam tolu . . . . . ½ "
Wine . . . . . ½ "

Mix.

Dose. — Thirty drops three or four times a day.

Use. — These drops should be given in a little mucilage or tea. They assist expectoration in tickling coughs, and afford great relief.

ANTI-EMETIC DROPS.

Take Salt . . . . . 2 ounces.
Capsicum . . . . . 1 "
Vinegar . . . . . 1 quart.

Mix.

Dose. — A table-spoonful whenever there is great nausea or vomiting.

CARMINATIVE DROPS.

Take Angelica . . . . . 4 ounces.
Wild valerian . . . . . 2 "
Calamus . . . . . ½ "
Anise, dill, and fennel seeds (each) . . . . . 1 "
Catnip blows or leaves, and motherwort, each a large handful.
Pleurisy root . . . . . 4 ounces.

Infuse the whole in two quarts of brandy or good common spirits, and digest in a moderate heat for twenty-four hours; then press out and strain the liquid, and add to it half a pound of loaf sugar. When settled, bottle it for use.

Dose. — For children, from ten to sixty drops, according to the age; for adults, from one to four tea-spoonfuls in a cup of warm tea. It may be repeated once in four or six hours.

Use. — It eases pain, creates a moderate perspiration, and produces refreshing sleep; is good for restless children, removes flatulency and wind colic, and is useful in hysteric and nervous affections, female debility, etc.

TOOTHACHE DROPS.

Take of Oil of sassafras . . . . . ½ ounce.
Oil of cloves . . . . . ½ "

Mix: dip a piece of lint or cotton in the drops, and put it in the tooth.

5. **Decoctions.** — Decoctions are certain preparations of medicines and drinks, made by boiling substances in water for a

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considerable time. Where we wish to administer the virtues of any plant in a small volume in the form of drinks, decoctions are very useful. Some ingredients, however, lose a part of their efficacy by long boiling, and are given best in some other form.

Vegetables designed for decoction should be cut into slices, or bruised into a coarse powder, that their strength may be more easily extracted.

DIURETIC DECOCTION.

Take of Queen of the meadow . . . . . 2 ounces.
Milk-weed . . . . . 2 "
Juniper berries . . . . . 2 "
Dwarf elder . . . . . 2 "
Spearmint . . . . . 2 "
Wild carrot seeds . . . . . 2 "

Put all into a mortar and bruise: make a strong decoction.

Dose. — Half a pint, to be taken often through the day.

Use. — This decoction is very useful in *gravel*, *dropsy*, etc. It is strongly diuretic.

RHEUMATIC DECOCTION.

Take of Virginia snake-root . . . . . 1 drachm.
White pine bark . . . . . 2 "
Burdock seeds . . . . . 2 "
Prickly ash bark . . . . . 2 "

Pulverize all together, and add half a gallon of water; boil to three pints.

Dose. — Half a pint two or three times a day.

Use. — This forms an excellent decoction in chronic rheumatism.

URINARY DECOCTION.

Take of Marsh-mallows . . . . . 3 ounces.
Queen of the meadow . . . . . 3 "

Add four quarts of water, and boil to one; then add two ounces of gum Arabic, and half an ounce of pulverized niter.

Dose. — A tea-cupful four or five times a day.

Use. — This is an excellent remedy in nephritis or inflammation of the kidney. It is also useful in the treatment of inflammation of the bladder, in hæmaturia or bloody urine, and other urinary diseases. It is a demulcent diuretic.

FOR THE GRAVEL.

Take of the root of Jacob's ladder . . . . . 2 ounces.

Make into a decoction; to be taken as a common drink.

6. **Extracts.** — Extracts are the products of vegetables, produced by boiling or evaporating to a proper consistence. There are two kinds: spirituous and watery. In the former, spirits are used to extract the strength of the article of which the extract is

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made; in the latter, water is made use of. In preparing them, it is necessary often to add fresh water, if water be used, until all the strength is extracted; then strain and slowly evaporate, until the liquid is brought to the consistence of thick molasses; after which let it be placed in earthen jars, and tightly covered with a bladder or skin, to prevent moulding.

This is an excellent form to administer many kinds of medicinal plants, as the quantity to be given is very small.

The inspissated juice of vegetables is the best method to obtain their virtues in a concentrated form.

The extract of jalap, dandelion, blood-root, henbane, gentian, stramonium, butternut, etc., are all obtained in a similar manner — the roots or plants may be bruised, and spirits added; then pressed out, and placed in the sun till evaporated.

7. **Eye-waters.** — Eye-waters, or collyriums, are prepared from vegetable substances, and which are usually added to spirits or water, and applied to the eyes in the form of wash. They should first be applied very weak, and the strength gradually increased.

SPIRITUOUS EYE-WATER.

Take of Fourth-proof brandy . . . . . ½ pint.
Rain water . . . . . ½ "
Camphor . . . . . ½ drachm.

Use. — This eye-water is used in chronic ophthalmia, or inflammation of the eyes.

MUCILAGINOUS OR LAURUS EYE-WATER.

Take of pith of sassafras . . . . . 1 drachm.

Add it to a suitable quantity of rose water, which makes an excellent mucilaginous and cooling wash.

Use. — It will be found beneficial in the treatment of ophthalmia, or inflammation of the eyes, during the acute stages.

DR. LOBSTEIN'S EYE-WATER.

Take of White vitriol . . . . . 1 drachm.
Common table salt, fine . . . . . 3 "
Common water . . . . . 1 pint.

Boil the water for a quarter of an hour; then put the two salts in a new earthen pot, and pour the boiling water over it; let it simmer for fifteen minutes; when cold, strain it through filtering paper.

Use. — For inflammations of the eye.

8. **Fomentations.** — Fomentations are usually composed of several kinds of bitter herbs, and are very useful to relieve pain and inflammation, by taking off tension and spasm; or

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to brace and restore the tone and vigor of those parts to which they are applied.

The first of these intentions may generally be answered by warm fomentations; and the second, by those that are cold. They should often be renewed. This class of medicine is very valuable in a great many complaints.

Hop Fomentation. — Take two handfuls of hops and one pint of vinegar; heat the latter, and pour it on the hops: boil till the strength is extracted.

In cases of sore throat, hoarseness, or soreness of the breast, severe pain in the abdomen, colic, dysentery, etc., this fomentation will give ease and allay irritation. It may be applied at bed-time, and kept on all night; or any time in the day, if necessary. It is usually best to apply warm, and often to renew.

COMMON FOMENTATION.

Take Hops	3	ounces.
Tansy	3	"
Wormwood	3	"
Hoarhound	3	"
Catnip	3	"

Or a handful of each. Make of these articles a strong decoction, by boiling in equal parts of vinegar and water.

Use. — This will be found very efficacious in relieving pain and inflammation resulting from contusions, sprains, dislocations, and other causes.

It may also be usefully employed in inflammation of the bowels and of the stomach; in short, in almost every species of inflammation it will be found very useful.

STIMULATING FOMENTATION.

Take Red pepper	2	ounces.
Bruised mustard seeds	2	"
Alcohol or spirits	2	quarts.

Simmer a few minutes.

Use. — This is used as an external application in paralysis or palsy.

Poppy Fomentation. — Take of white poppy heads or the flowers a suitable quantity; add equal quantities of vinegar and water, and simmer a few minutes.

Use. — This is an excellent anodyne fomentation, used in painful affections.

Ophthalmic Fomentation. — Take of stramonium leaves, and simmer them in water.

Use. — In severe or acute ophthalmia, or inflammation of the eyes, this fomentation is sometimes used with good effect.

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MINT FOMENTATION. — Take of fresh spearmint a proper quantity; let it be bruised, add spirits, and simmer.

Use. — In cases of great irritability of the stomach, attended with frequent vomiting, this fomentation, applied to the pit of it, will often relieve when other means fail.

9. **Gargles.** — Gargles, in many complaints, are very useful, particularly in the aphthæ, quinsy, fevers, etc. By this class of medicines, we understand certain infusions, decoctions, or liquids, suitable or designed for washing the mouth and throat, which, by their stimulating or detergent properties, become efficacious.

Adults can generally gargle their mouth or throat with little difficulty, but infants and children require an assistant to apply them, which is done best by tying a little piece of linen to a probe or stick, dipping it in the liquid, and often applying it. They should never be made very stimulating, except in severe cases.

STIMULATING GARGLE. — Take of sumach berries and golden seal a sufficient quantity; make a strong decoction, strain, and add one drachm of pulverized alum to every pint of the decoction.

Use. — This gargle is used frequently in ulcerated sore throat of long standing.

ASTRINGENT GARGLE. — Take of cohosh a proper quantity, and make a strong decoction.

Use. — This gargle is used in quinsy.

ANTIPHLOGISTIC GARGLE.

Take of Sage . . . . . 1 ounce.
Hyssop . . . . . 1 "

Pour on one quart of boiling water, and let it stand half an hour; then strain, and add one drachm of fine borax.

Use. — This gargle is usefully employed in aphthæ, and in quinsy or sore throat, particularly where there is acute inflammation.

YEAST GARGLE. — Take yeast, a wine-glassful; milk, a gill: sweeten with molasses. Excellent for sore throat.

GARGLE FOR PUTRID SORE THROAT. — Take of the bark of upland sumach, high blackberry, common white elm bark, white oak bark, small blacksnake-root, Nanny berry bark, of each a handful, except the snake-root, which must be half the quantity: make a strong decoction, add a piece of alum, and sweeten well with honey; then bottle for use. Apply often to the sores with a rag. It may at first irritate a little, but then cures.

10. **Infusions.** — Infusions, or, as they are usually called, teas, are a very common and good method of administering the virtues of various medical agents. It probably is the most natural,

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if not ancient, method of preparing medicine. A two-fold benefit is derived from infusions: first, the medicinal properties of the article made use of; secondly, the heat and diluent properties of the water.

An excellent method to make teas or infusions is, to put the plant or root into a tea-pot, pour on boiling water, and let it stand a short time by the side of the fire. In this way the infusion is readily made very clear.

For infusions generally, put a handful of the herb into a tea-pot, and add a quart of boiling water; when cool, drink freely. All kinds are prepared in this manner, except otherwise directed; such as hops, elecampane, elder, fennel seed, flag-root or calamus, boneset, linseed, slippery elm, balm, catnip, hyssop, spearmint, peppermint, tansy, pennyroyal, dandelion, sassafras, snake-root, etc.

COMPOSITION OR BITTER TEA.

Take of	Snake-root	one handful.
	Gold thread	"
	Centaury	"
	Wormwood	"
	Tansy	"
	Boneset	"
	Hoarhound	"

Mix all well together.

Dose. — To a large table-spoonful pour one pint of boiling water; when cold, drink a wine-glassful four times a day.

Use. — For weak lungs, coughs, pain in the breast, loss of appetite, dyspepsia, etc.

ANTHELMINTIC INFUSION OR WORM POWDER.

Take of	Carolina pink	½ ounce.
	Senna	½ "
	Manna	½ "

Add to these one quart of boiling water, and let it stand six hours; strain, and sweeten with loaf sugar or honey, and add a little milk.

Dose. — Half a tea-cupful three or four times a day for a child six years old; or sufficient to purge.

Use. — It is an excellent medicine to expel worms.

COMPOUND INFUSION OF SENNA.

Take of	Senna	½ ounce.
	Manna	½ "
	Cream of Tartar	½ "
	Fennel seed, bruised	1 tea-spoonful.

Add one pint of boiling water to the senna and manna, strain, add the cream of tartar, and sweeten.

Dose. — A wine-glassful every hour till it purges.

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Use. — A cleansing and cooling purgative; useful in fevers and inflammatory diseases.

11. **Injections or Clysters.** — Injections or clysters are certain liquids thrown into the rectum by mechanical means. Their operation or effect depends upon the ingredients used: some are emollient; others are stimulant, anodyne, purgative, anti-spasmodic, etc. Those generally used by practitioners are composed of starch; and so inefficiently are they used, or directed to be used, that little or no benefit is derived from them.

A large syringe should always be used for adults, and a small one for infants and children. This enables the practitioner or nurse, one of whom should always perform this simple, but valuable, operation, to throw up the injection to such an extent or distance as will be exceedingly efficacious. To prove effectual, a large quantity should always be given. Few are aware of the great benefit and efficacy of injections or clysters. They often prove a sovereign remedy for diseases which nothing else will relieve; hence every family should possess a syringe, and a knowledge of its use.

Sometimes the stomach is in such a state that medicine cannot be given to act upon the bowels: in this case the syringe is very useful; also in strangulated or incarcerated hernia or rupture, bilious colic, dysentery, cholera morbus, and bowel complaints generally.

COMMON INJECTION.

Take of Sweet milk	1 pint.
Mucilage of slippery elm	1 "
Olive oil	1 gill.
Molasses	½ pint.
Saleratus	1 tea-spoonful.

Mix.

Use. — This forms an injection of much value, and may be used in almost every case where one is indicated. It is often used with admirable effects in dysentery and diarrhea. Sometimes, when there is great pain in the lower intestines, it will do better if a drachm of laudanum is added to each injection; and it will not fail of relieving the griping pain occasioned by the disease. It should be used with a large-sized syringe.

Soap-suds Injection. — Take of soap-suds, strong, a sufficient quantity; inject it about blood-warm.

Use. — This is an injection which may always be conveniently procured. It is mild, and may be administered when a more stimulating injection would be hurtful. It is very useful in habitual costiveness, when purgatives are ineffectual.

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STIMULATING INJECTION.

Take of Lobelia . . . . . 1 drachm.
Inner bark of large hemlock . . . . . ½ ounce.
Red pepper . . . . . 1 drachm.

Make a tea or infusion, sweeten, and introduce from half a pint to a pint.

Use. — This injection is occasionally used in very obstinate cases of costiveness, bilious and painter's colic, and strangulated or incarcerated hernia.

TOBACCO INJECTION.

Take of Tobacco . . . . . 1 drachm.
Tepid water . . . . . 1 pint.

Infuse for twenty or thirty minutes.

Use. — This injection is sometimes used in the treatment of incarcerated hernia, with a view to its relaxing properties. *It should be employed with caution, as it has sometimes produced alarming symptoms.* It is also used to destroy worms from the rectum. Salt and water injection is also very good.

12. **Liniments.** — Liniments are preparations employed in frictions or embrocations on the skin. They are usually composed of oily, spirituous, and gummy or saponaceous substances; as some of the essential oils, alcohol, soap, camphor, &c. They are used externally, for rheumatism, quinsy, and other painful affections. The benefit is derived from their counter-irritant effects.

SOAP OR COMMON LINIMENTS.

Take of Castile soap . . . . . 1 ounce.
Oil of sassafras . . . . . 1 "
Camphor . . . . . 1 "
Spirits of hartshorn . . . . . 1 "
Alcohol . . . . . 1 "

Mix.

Use. — This forms an excellent liniment in diseases of the throat and tonsils.

HEMLOCK LINIMENT.

Take of Oil of hemlock . . . . . 1 ounce.
Gum camphor . . . . . ½ "
Gum opium . . . . . ½ "

Add one quart of alcohol: mix.

Use. — This forms an extraordinary combination for all cases of pain, particularly of an inflammatory character, where heating liniments prove too stimulating. I have scarcely ever found it fail of affording immediate relief in inflammatory rheumatism, quinsy, white swelling, inflamed breasts, etc. Bathe frequently.

13. **Liquids.** — Liquids include such medicines as are made from various menstruums or solvents, such as spirits, wine, water, etc. They are usually compound preparations.

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RHEUMATIC WINE TINCTURE.

Take of White turpentine . . . . . 4 ounces.
Inspissated juice of pokeberries . . . . . 4 "
Malaga wine, or metheglin . . . . . 3 gallons.

Let these articles be mixed, and stand one week; then filter, and bottle.

Dose. — Half a wine-glassful two or three times a day.

Use. — This is an excellent preparation for chronic rheumatism.

ANTI-PYROSIS LIQUID.

Take of Elixir salutis . . . . . 1 pound.
Tincture of balsam tolu . . . . . 1 ounce.

Mix.

Dose. — A table-spoonful every morning or evening.

Use. — This liquid will be found efficacious in removing the troublesome symptoms of water-brash or pyrosis. It may be taken, mixed in water, every night, at the time of going to bed.

MINT LIQUID. — Take of spearmint, green, bruise, and add a sufficient quantity to saturate a quart of Holland gin.

Use. — This preparation of mint will be found exceedingly useful in the treatment of *strangury and retention of urine*, arising from stricture in the urethra, and diseases of the prostate gland. It has proved successful when other means have failed.

Dose. — The dose must be regulated according to the patient's habits. Some will require half, others a gill at a time, and repeated every thirty minutes. The patient should take it till it produces relief. This liquid has also been used with the best effects in the treatment of hemorrhoids, particularly in a state of inflammation; to be applied on a little cotton. In cases where the green mint can not be procured, the dry may be used, although it may not be so good. This liquid may also be used, both externally and internally, in cases of severe vomiting.

RHEUMATIC LIQUID.

Take of Sassafras oil . . . . . 2 ounces.
Hemlock oil . . . . . 1 ounce.
Red cedar oil . . . . . 1 "
Oil of turpentine . . . . . 1 "
Gum camphor . . . . . 1 "
Capsicum . . . . . 1 "

Mix: add two quarts of alcohol.

Use. — This is a very valuable compound for rheumatism, and every kind of pain, ague in the face and jaws, neuralgia, spinal irritation, etc. Bathe the parts affected for a few minutes with the hand or flannel; repeat when painful: if too strong, dilute with a little water. The addition of an ounce or two of opium would no doubt make it still better.

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STIMULATING LIQUID OR DROPS.

Take of Red pepper . . . . . 2 ounces.
Common spirits or brandy . . . . . 2 quarts.

Let it stand a few days; or, if wanted immediately, simmer a few minutes.

Use. — This liquid is used externally, in rheumatism, paralysis, "soreness of the flesh," ague in the face and breast, pain of the breast, and, indeed, of any and every other organ. It is exceedingly valuable, seldom or never disappointing the practitioner in relieving pain. Good internally, to relieve pain, in half tea-spoonful doses.

TINCTURE OF IPECACUANHA, OR WINE OF IPECACUANHA.

Take of the root of Ipecacuanha, in powder . . . . . 1 ounce.
Malaga wine . . . . . 16 "

Macerate for seven days, and filtrate.

Use. — This makes a valuable emetic for children.

Dose. — The dose is one ounce for adults; children two years of age, one tea-spoonful every ten or fifteen minutes till it pukes them.

14. **Mucilages.** — Mucilages are soft, bland substances, made by dissolving different kinds of gum, or the roots, leaves, or other parts which abound with mucilage. Mucilaginous drinks are useful in diseases of the bowels, urinary organs, etc. Also to cover any acrid matter, so as to prevent its irritating the parts over which it passes.

MUCILAGE OF GUM ARABIC.

Take of Gum Arabic . . . . . 4 ounces.
Boiling water . . . . . 8 "

Rub the gum with the water gradually, until it forms a mucilage; then strain.

Use. — Mucilage of gum Arabic is used in pharmacy, to suspend in water substances insoluble in that liquid, to diffuse oils in water, and for similar purposes. It is sometimes employed in the formation of pills. It is very useful in heat and scalding of the water.

Dose. — Half a wine-glassful three or four times a day.

MUCILAGE OF SLIPPERY ELM.

Take of Slippery elm bark . . . . . 1 table-spoonful.
Boiling water . . . . . 1 quart.

Let it stand an hour. It is employed in inflammation of the stomach and other diseases. It is useful in bowel complaints generally.

15. **Oils.** — Oils are of various kinds, and used either singly or combined. They are used generally, when applied externally, for rheumatism and other painful affections.

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ANTHELMINTIC OR WORM OIL.

Take of Castor oil . . . . . 1 ounce.
Worm-seed oil . . . . . 1 drachm.
Anise oil . . . . . 1 "
Tincture of myrrh . . . . . 1 "

Mix, and warm to the temperature of milk.

Dose. — For an adult, a large tea-spoonful three or four times a day for three days. For children, give in proportion to their age; on the third day give a portion of mandrake physic.

Oil of Red Pepper. — This oil may be obtained by adding the pepper, pulverized, to ether, and letting it evaporate. The oil only remains.

Use. — This oil is very efficacious in white swellings, lumbago, sciatica, rickets, ague in the face and breast, quinsy, pain in the side and breast, pleurisy, and for painful affections generally. It is powerful, and should be applied very sparingly. The essence of it is excellent for pain and cramp in the breast and stomach.

16. **Ointments.** — Ointments are a class of medicines which contain the properties of certain vegetables designed for external use. Their consistence is softer than that of salves or plasters, but the heat of the body is sufficient to melt them. Lard and butter, or oil and wax, are principally used to make them.

According to the direction given in common dispensatories, the properties of vegetables are not communicated to either of these substances through the medium of water alone, particularly if they are dry; but, by simmering them in spirits, the desired union is obtained.

Stramonium Ointment. — Take of stramonium leaves a proper quantity, while green; bruise them to a pulp, and put them into an earthen vessel; then cover with spirits and lard, and simmer the leaves until they become crisped; strain, and add of Venice turpentine half a pound to every ten pounds of the ointment.

Use. — This forms an excellent application for *scalds*, *burns*, and *cutaneous eruptions*, attended with inflammation. It may be applied occasionally, with the finger or with a piece of linen.

Green Ointment. — Take of tansy, wormwood, hoarhound, catnip, hops, of each an equal quantity. Bruise them, put the whole into a kettle, cover over with spirits and lard, and let it stand two weeks; then simmer a while, and strain. Add one pound of common turpentine to every ten pounds of the ointment.

Use. — This ointment is very cooling, resolvent, relaxing, and emollient. It is very useful in sprains, contusions, swellings, dislocations, contracted sinews, etc.

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DISCUTIENT OINTMENT.

Take of Cicuta leaves . . . . . ½ pound.
Yellow dock . . . . . 1 "
Poke-root . . . . . 1 "
Stramonium . . . . . 1 "
Deadly nightshade . . . . . 1 "
Bitter-sweet, bark of root . . . . . ½ "

Bruise all except the stalks, which ought to be left out; cover with cider, brandy, or any kind of spirits, and let it stand for twenty-four hours; then add sufficient lard, when melted, to cover the whole, and simmer slowly, till all the virtue of the articles has been communicated to the lard. Then strain and press. After which add half a pound of Venice turpentine.

Use. — This ointment is exceedingly valuable in discussing scrofulous, indolent, and glandular tumors and swellings.

It should be rubbed on the parts about thirty minutes each time that it is applied; after which let a piece of cotton be applied and secured by a proper bandage.

ITCH OINTMENT.

Take of Sulphur vivum, fine . . . . . 1 ounce.
Venice turpentine . . . . . 1 "
Lard . . . . . ½ pound.

Melt the lard and turpentine; then add the sulphur, and stir till it is cold: let it be applied two or three times a day.

Use. — It soon cures the complaint, without the necessity of changing the clothes.

CELANDINE OINTMENT. — Take the herb or plant, bruise, cover with any kind of spirits, and simmer a while; then add fresh butter, and let the whole remain over the fire until the leaves are *crisped;* strain.

Use. — This ointment is useful in the piles and in cutaneous eruptions.

BROWN OINTMENT, OPHTHALMIC OINTMENT, EYE-SALVE OR EYE-BALSAM.

Take of Fresh butter . . . . . 3 ounces.
White wax . . . . . ½ "
Red precipitate . . . . . 2½ drachms.
Prepared tutty . . . . . 1 "
Camphor, dissolved in olive oil . . . . . 1 "

Melt the first two articles, and, when nearly cold, stir in the others, finely pulverized. This ointment, for eruptions generally, sore eyes, etc., is superior to all others. It almost invariably benefits in every case.

FOR THE SALT RHEUM. — Take of narrow dock-roots, scabious,

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and swamp sassafras, equal parts; boil down strong, and add one pound of lard; simmer down to an ointment. Rub the parts affected three or four times a day.

MARSH-MALLOW OINTMENT. — Take marsh-mallow tops and roots, add spirits, bruise and simmer; then cover the plant with fresh butter; simmer till the strength is extracted.

Use. — This forms a very cooling ointment, and is efficacious in all kinds of eruptions attended with inflammation, such as erysipelas (*St. Anthony's Fire*), sore nipples, cutaneous affections, particularly in children, in the face and round the ears.

17. **Plasters.** — Plasters, like ointments, have generally for their base an oily or fatty substance; but they are more solid and tough, and adhere to the parts without melting.

Some are composed of wax, resin, and oils; others are the product of a chemical combination between oleaginous substances and the metallic oxides, with which they are combined. Some are spread upon leather, others upon linen.

FERRIS'S BLACK PLASTER. — Take of white-oak bark a proper quantity, bruise, add urine sufficient to cover it, let it stand two or three days, and then boil it till it becomes of the consistence of honey; add to every five pounds one pound of honey and one pound of strained turpentine gum; add two drachms of white vitriol, pulverized, to every ounce, when it is intended to act as an escharotic.

Use. — This forms a very valuable plaster for cancers, ulcers, or white swelling in a state of ulceration, and for the removal of spongy or fungous flesh. It excites but little pain or inflammation. It should be spread on linen or a soft piece of leather.

STRENGTHENING PLASTER. — Take of hemlock gum, add one fourth the quantity of white turpentine, dissolve and strain it.

Use. — This forms an excellent strengthening and stimulating plaster. It is employed in chronic rheumatism, weakness in the back, etc.

BLISTERING PLASTER. — Take of mutton suet, beeswax, white resin, of each an equal part. Melt these articles together, and add one proportion of Spanish flies, pulverized.

ASTRINGENT PLASTER. — Take of white-oak bark a sufficient quantity; macerate it in cold water one day, then put it into a boiler, and evaporate till an extract is obtained.

Use. — It is useful in hernia or rupture. To be spread on a soft piece of leather, and applied over the rupture.

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ADHESIVE AND STRENGTHENING PLASTER.

Take of White resin . . . . . 3 pounds.
Beeswax . . . . . 4 ounces.
Burgundy pitch . . . . . 4 "
Mutton tallow . . . . . 4 "

Melt these together, and then add

Sweet oil . . . . . ½ ounce.
Camphor . . . . . ½ "
West India rum . . . . . 1 gill.
Sassafras oil . . . . . ½ ounce.

When the latter articles have been incorporated with the former, let the whole be poured into a vessel of water, and work it in the hands till cold. In some seasons and climates a little more resin, or a little more sweet oil, is required to make it of the right consistence.

Use. — This is used as a sticking plaster in rheumatism. It is likewise useful in cuts, ulcers, etc.

IRRITATING PLASTER. — Substitute for McNair's; and far superior. The following plaster is an admirable preparation for chronic and painful complaints, for the liver, spine, and other diseases. I find that it is a substitute for McNair's *counter-irritating plaster*, and altogether better.

Take of good thick tar, a pound; gum turpentine, half a pound; Burgundy pitch, half a pound; beeswax, half a pound; melt, strain, and boil a few minutes; then remove from the fire, and stir in as it cools the following articles, finely pulverized, mixed, and sifted, viz.: — three ounces each of poke-root, mandrake, blood-root, and Indian turnip. Keep stirring occasionally, till the whole mass is uniformly incorporated.

Directions. — Spread on a piece of soft leather and place over the part affected. Keep it on as long as can be borne, then remove, and put it on again in a day or two.

If the itching proves too troublesome, occasionally remove and wash the parts with water or spirits.

This plaster brings out pustules or eruptions like the small-pox, and causes a discharge of matter. It appears superior to all other plasters. I should recommend those who have obstinate ulcers to apply the *irritating plaster* in preference to any other.

COMMON STRENGTHENING PLASTER, CALLED "BEAR CLOTH PLASTER."

Take of Resin (usually termed rosin) . . . . . 1 pound.
Beeswax . . . . . 4 ounces.
Capsicum . . . . . 4 "
Spirits . . . . . 1 quart.

Simmer the pepper (enclosed in a linen bag) in the spirits, and strain. Melt the other articles together, and add the tincture; sim-

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mer till the spirits are nearly all evaporated. Take it from the fire, and when nearly cold, add two ounces of fine camphor and three drachms of oil of sassafras.

Use. — This is used whenever a strengthening plaster is wanted. It seldom or never fails to afford relief.

18. **Poultices.** — Poultices are external applications, of a soft or pulpy consistence, and somewhat tenacious. They are of various kinds; some are designed for discutients, others to produce suppuration; some are refrigerant or cooling, while others are stimulating; others again are emollient. In general, poultices are best applied warm or tepid; and they should not be suffered to get dry before renewed.

LINSEED POULTICE.

Take of Linseed, powdered . . . . . 4 ounces.
Hot water . . . . . ½ pint.

Gradually sprinkle the powder into the water, and stir well together with a spoon.

Use. — This is a good and convenient emollient poultice for many cases. It is preferable to the bread and milk poultice, so much in use, as it is not so liable to become brittle and hard when dry. It is very useful in carbuncle, obstinate inflammation, etc.

CARROT POULTICE.

Take of Boiled carrots, bruised . . . . . 1 pound.
Flour . . . . . 1 ounce.
Butter . . . . . ¼ "

Mix them with a sufficient quantity of hot water to form a pulp.

Use. — This will be found a valuable application to ulcerated sores and swellings, scrofulous sores of an irritable kind, and many other inveterate ulcers.

MUSTARD CATAPLASM.

Take of Mustard, in powder . . . . . 4 ounces.
Soft bread, or Indian meal . . . . . 6 "

Vinegar, of the best quality, as much as is sufficient to mix, and make into a cataplasm.

Use. — This is found to be a good application to the soles of the feet in cases of rheumatism, gout, inflammatory diseases, fevers, etc.

Common Poultice. — Take of slippery-elm bark a sufficient quantity, pulverized; stir it in hot or warm milk and water, to the consistence of a poultice.

Use. — This poultice exceeds every other in point of efficacy. It is of almost universal application, and removes inflammation sooner than any other. Compared to this, every other poultice dwindles into insignificance.

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ALKALINE POULTICE. — Take of ley, rather weak, warm it, and stir in of slippery-elm bark sufficient to form a poultice.

Use. — This poultice is useful in inflammation of the breast and other parts, in felons, white swellings, lockjaw, wounds, fistulas, etc.

YEAST POULTICE.

Take of Milk, blood-warm . . . . . 1 pint.
Yeast . . . . . 1 gill.

Stir in fine slippery-elm bark, to form a poultice.

Use. — This is a good antiseptic and refrigerant poultice. Applied to gangrenous ulcers, it is more efficacious than any other; it sooner arrests mortification, used with proper auxiliaries. It is also very serviceable in other species of inflammation.

INDIAN TURNIP POULTICE. — Take of the tops and roots of Indian turnip, if green; if dry, the roots only; simmer in water, and add slippery-elm bark sufficient to form into a poultice.

Use. — This poultice is used in the treatment of king's evil or scrofula with the best effect. Altogether superior to every other poultice in scrofula in a state of swelling and inflammation.

POTATO POULTICE. — Boil the common potato, mash or bruise soft, and then stir in the slippery-elm bark.

Use. — This poultice has been used with success in ophthalmia of an acute character, when other means have failed.

CICUTA POULTICE. — Take the plant, green or dry, and boil in milk and water until it is very soft; add a very small quantity of the slippery-elm bark, sufficient to make it adhere; apply it blood-warm.

Use. — It is excellent to produce suppuration, especially in those swellings where the glands are indurated, inflamed *breasts*, *testicles*, *cancers*, etc.

FERRIS'S POULTICE. — Scrape the common carrot, add to it a decoction of spikenard root, and stir in Indian meal.

Use. — The late Dr. Ferris was in the habit of using this poultice in cases of inflammation bordering on gangrene or mortification.

BLACK WILLOW POULTICE. — Take the root of black willow bark, (called pussy willow), pulverized, a sufficient quantity; form it into a poultice by the addition of cream.

Use. — This is the common poultice of the celebrated Dr. Bone, who acquired great celebrity for the successful treatment of inflammation and ulcers.

19. **Pills.** — Pills are certain small, round substances, composed of vegetables, and are designed to operate in a small dose; the disagreeable taste or smell of them renders it necessary that they should be concealed from the palate.

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In general, they do not operate as soon as medicine in other forms. Pills are a good form to administer some kinds of medicine, as some can take it made in this manner better than any other.

ANTI-DYSPEPTIC PILLS.

Take of Socotrine aloes	4	ounces.
Castile soap	2	"
Colocynth	2	"
Gamboge	2	"
Extract of gentian	4	"
Oil of cloves	2	drachms.

Mix, and form into pills of the size of a pea.

Dose. — One or two morning and evening, according as they operate.

Use. — This is a very valuable pill; while it cleanses the stomach, it restores the tone, without creating debility.

NERVOUS OR HYSTERIC PILL.

Take of Asafœtida	1	ounce.
Opium	1	"
Carbonate of ammonia	1	"

Dissolve the same over a fire, mix, and form into pills of the size of a pea.

Dose. — One or two. It is useful in hysterics, and all nervous cases.

OPIUM PILL. — Take of Turkey opium, cut out the soft part, and form it into pills of the size of a pea (three grains), and rub them in a little flour.

Dose. — One every hour; or two, if necessary.

Use. — This is the best form to give opium in very urgent and acute cases. In vomiting from any cause, attended with spasms, it affords prompt relief. It is useful in colic, etc.

HEPATIC PILL. — Take extract of dandelion; mandrake, pulverized; blood-root, pulverized; of each equal parts, or sufficient to make a pill mass; add a few drops of essential oil, peppermint, or spearmint, and form into commom sized pills. Take three night and morning.

This is an extraordinary remedy for the liver complaint. It generally soon removes the pain in the side, shoulder, etc., and is excellent in jaundice and affections of the kidneys. The irritating plaster should be worn over the seat of the disease. An amendment is sure to follow their use in a few days.

CROTON PILL.

Take of Croton oil	2	drops.
Extract of rhubarb, or mandrake	1	drachm.

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Form into twelve pills, and take two or three every night; they will keep the bowels regular, without debility.

IPECAC PILL. — Add molasses or mucilage of gum Arabic, and form into pills size of a pea. Dose, one or two three times a day. Good for fever, dyspepsia, etc.

RHEUMATIC PILL. — Inspissated juice of poke; gum turpentine; gum guaiacum, pulverized; mix all, melt, and strain. When sufficiently cool, form into pills common size. Dose, three morning, noon, and night. Excellent for rheumatism.

FEMALE PILL FOR OBSTRUCTED MENSES. — Equal parts of red oxide of iron, aloes, and white turpentine, pulverized. Melt the turpentine, strain; and when cold, pulverize — mix all together with mucilage of gum tragacanth. Dose, three or four, two or three times a day, with motherwort tea.

MANDRAKE PILL.

Take of Extract of mandrake . . . . . 2 parts.
Capsicum . . . . . 1 "

Mix: form into pills common size. Dose, three or four every night, or sufficient to regulate the bowels. Excellent for liver, bilious, dropsical, dyspeptic, and nervous complaints.

PILL FOR CHRONIC BRONCHITIS AND ASTHMA. — Make a pill of *tar*, *loaf sugar*, and pulverized *skunk-cabbage root*; take one every one, two, or three hours, as they agree with the stomach, and continue daily till cured; which is in from four to six weeks.

CICUTA PILL. — Take of Cicuta leaves, add sufficient turpentine to form into pills.

Dose. — One or two may be given for a dose.

Use. — This pill aids in discussing hard, glandular tumors.

HYDRAGOGUE PILL.

Take of Jalap . . . . . 1 scruple.
Scammony . . . . . 1 "
Gamboge . . . . . 1 "

Add mucilage of gum Arabic, enough to form into pills. Make sixteen pills.

Dose. — One every hour.

Use. — This pill cures dropsy of the chest, and may be given when other means fail.

RED OR STIMULATING PILL. — Take of Cayenne pepper, add sufficient of molasses and flour to form into pills.

Use. — Useful in dropsy of the chest, asthma, flatulence, indigestion, pain, etc.

Dose. — Give three pills three times a day; or take them occasionally.

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NERVOUS PILL. — Take of extract of foreign valerian, and of chamomile, equal parts. Mix and form into three grain pills, and take three or four a day. Useful in cholera and nervous cases.

ANTI-BILIOUS PILL.

Take best Aloes, pulverized	5	ounces.
Dry castile soap, fine	½	"
Gamboge, fine	1	"
Colocynth	1	"
Extract of gentian	1	"
Mandrake	1	"
Capsicum	2	"
Oil of peppermint	½	drachm.

Incorporate well together, and form into pills.

Dose. — From three to five. This makes one of the best pills for all ordinary complaints, and purges without griping or causing debility, or leaving the bowels costive.

ANTI-HYSTERIC PILL.

Take of Musk	24	grains.
Extract of opium	12	"
Extract of valerian	24	"

Make sixteen pills. Give one or two occasionally.

20. **Powders.** — Powders are the most simple and natural form in which medicine can be given, as their virtues are not impaired by passing through any particular process; but when it is necessary to administer a large quantity of any article, they can not be conveniently taken in this form. They are either simple or compound. All powders should be kept in a glass vessel, closely stopped, and from the light, otherwise their virtues may be impaired.

Powders may be administered in molasses, honey, syrup, tea, or any other suitable vehicle.

SNUFF POWDER.

Take of High laurel	1	ounce.
Sassafras	1	"
Blood-root	1	"

Pulverized; mix well. Good for catarrh, obstructions of the head, etc.

ANTI-BILIOUS OR CATHARTIC POWDER, COMMON PURGATIVE OR PHYSIC.

Take of Jalap root	1	pound.
Alexandria senna	2	"
Cloves	2	ounces.

Let these articles be separately pulverized; then mix them together, and pass through a fine sieve.

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Dose. — A tea-spoonful (about a drachm). It should be put into a tea-cup, with a lump of loaf sugar, and a gill of boiling water added; given to the patient when cool, fasting, or on an empty stomach.

Use. — This forms the best general purgative that is now known. It combines power with mildness of action, and acts throughout the whole alimentary canal, cleansing it, and producing a healthy action. It may be given to every age and sex; it removes offensive accumulations in the bowels, without bringing on subsequent constipation; and it stimulates every contiguous organ to a healthy state. It is useful in all diseases where physic is required. It is very valuable in bilious and febrile diseases. The articles must be genuine. I have seen it made so bad that I could not recognize it. Gruel alone to be drank during the day the above is taken.

FEVER AND AGUE POWDER.

Take of Sulphate of quinine	1 scruple.
Capsicum	2 "

Mix, and rub well in a mortar; divide into ten powders, and give one every two hours, in syrup, after having cleansed the stomach and bowels. A sure remedy for chills and fever; and excellent where the wine tincture can not be taken.

ANODYNE POWDER. — Take best Turkey opium, and suspend it in a bag in the chimney till hard or dry; pulverize and sift.

Take of this opium	½ ounce.
Capsicum	1 "

Mix, and rub well in a mortar.

Dose. — From two to four grains, in syrup, every two or four hours, till relief is obtained. This is a powerful anodyne, and is sure to relieve pain when all other means fail; but should only be given in urgent cases, and when no relief can be obtained by other means. Exceedingly valuable in fits, lockjaw, colic, and severe pain.

COMMON EMETIC POWDER.

Take of Ipecacuanha	4 ounces.
Lobelia	4 "
Blood-root	2 "

Pulverize separately.

Dose. — A tea-spoonful given every thirty minutes till it operates. It should generally be given in warm boneset or chamomile flower tea. If the first or second portions are rejected, continue to give it till vomiting takes place.

Use. — This emetic, perhaps, is unsurpassed by any other for efficacy of action. It is administered in all those cases where an emetic is indicated; and from its extensive effects upon the system,

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is very efficacious in breaking up morbid associations, or exciting a healthy action of the system. It is useful in febrile and other diseases, etc. Excellent in the chronic affections of the liver, stomach, and intestines; drink freely of herb tea.

ANOTHER EMETIC. — The *skunk cabbage* seems to prevent any unpleasant spasm.

Take of Lobelia	12	ounces.
Blood-root	6	"
Skunk cabbage	6	"
Ipecac	8	"
Capsicum	2	"

Mix.

Dose. — Half a tea-spoonful, in boneset tea, every fifteen minutes till it operates. If the first or second doses are rejected, repeat. Boneset facilitates and renders the operation less severe.

BONE'S EMETIC AND CATHARTIC POWDER.

Take of Euphorbia ipecacuanha (half a tea-spoonful)	½	drachm.

To be given in molasses.

Use. — This is excellent in dropsy, obstruction of the menses, jaundice, and liver complaint.

EMMENAGOGUE, BLACK, OR TONIC POWDER.

Take of Flour of sulphur	4	ounces.
Gum myrrh	4	"
Steel filings, fine	4	"
Loaf sugar	4	"

Add to these articles a quart of wine, and simmer till nearly dry; remove from the fire, and, when cold, pulverize, and bottle for use.

Dose. — Half a tea-spoonful three times a day, to be taken in molasses; or the same quantity may be taken in the form of pills.

Use. — This forms an excellent preparation for the treatment of amenorrhea, or obstructed menses, when that complaint is an idiopathic, or primary disease.

DIAPHORETIC POWDER.

Take of Gum opium	½	drachm.
Camphor	2	"
Pulverized ipecacuanha	1	"
Cream of Tartar, or super-carbonate of soda	1	ounce.

Pulverize all separately, then mix. It is best to use pulverized opium.

Dose. — Ten grains, or half a tea-spoonful, as often as may be necessary.

Use. — This forms a valuable anodyne, diaphoretic, and sudorific. It is beneficially administered in fever, St. Anthony's fire, diarrhea, dysentery, and cholera morbus, and in all cases where an anodyne,

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combined with a sudorific, is required. In these diseases it should be administered in small doses. It is also applicable to many other diseases, such as rheumatism, gout, etc. It promotes perspiration without increasing the heat of the body. It produces a constant moisture of the skin for a great length of time, while it allays irritation.

Dr. Judd substitutes the *super-carbonate of soda* in place of *cream of tartar*. He considers it a great improvement.

EUPATORIUM POWDER. — Take of boneset and pulverize it very fine.

Dose. — From a tea-spoonful to a table-spoonful, three or four times a day; to be taken fasting; mixed in half a pint of hoarhound tea, and sweetened.

Use. — These powders have been used with considerable success in the treatment of dyspepsia, intermittent fever, and pulmonary diseases.

SMITH'S COUGH POWDER.

Take of Elecampane-root . . . . . 2 ounces.
Liquorice-root . . . . . 2 "
Blood-root . . . . . 2 "
Crane's bill . . . . . 2 "
Indian turnip . . . . . 2 "

Pulverize fine.

Dose. — Half a tea-spoonful, three times a day.

Use. — Good expectorant, pectoral, and tonic.

SMITH'S COLIC POWDER.

Take of Pleurisy root . . . . . 1 ounce.
Cayenne pepper . . . . . 1 drachm.

Pulverize, and mix in half a pint of water.

Dose. — One table-spoonful every twenty minutes, till it operates or relieves.

FEVER POWDER. — Take of dragon's claw, pulverized.

Dose. — A tea-spoonful, infused in a proper quantity of water, morning and evening.

Use. — These powders have been much celebrated in the treatment of fevers, and particularly of that species called hectic fever. They act as a mild, but efficient, sudorific, without increasing the force of the circulation. They may be safely administered in almost every stage of fever.

CEPHALIC POWDER.

Take of Blood-root . . . . . 1 ounce.
Bark of the root of the bayberry . . . . . 1 "
Common snuff . . . . . 1 "

Mix.

Use. — Useful in catarrh, headache, polypus, etc.

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HENRY'S CEPHALIC SNUFF. — Take the roots of daisies, yarrow, and white hellebore, colt's-foot leaves, and bayberry bark, of each one ounce, finely pulverized, and sift through gauze; mix the powders well together in a mortar, and drop in it one drachm of the essence of bergamot; after which put it in a bottle closely corked, for use.

Dose. — A small pinch of this snuff may be taken at bed-time, as a cure for vertigo, "*megrims*," obstructions from catarrh, etc.; it is effectual in relieving the headache.

CEPHALIC POWDER. — Take black pepper, pulverized, two tea-spoonfuls; stramonium, a table-spoonful; sage, a table-spoonful; mix well together, smoke in a new pipe and force the smoke through the nose. Excellent for catarrh and pain in the head.

RED OR STYPTIC POWDER. — Take of copperas; submit it to a red heat, in a flame of fire; a decomposition is effected, and a red substance is formed. This, pulverized, forms a powder containing highly styptic and astringent properties.

Use. — It is used in the treatment of bleeding piles, and in stopping hemorrhage or bleeding. It may be mixed with a little melted tallow, and introduced up the rectum, for the bleeding piles. It is very good in salt rheum, mixed with fresh butter.

HULL'S BILIOUS PHYSIC.

Take of Socotrine aloes	8	ounces.
Gum myrrh	1	"
Cinnamon	1	"
Cloves	1	"
Ginger	1	"
Saffron	1	"
Garden sunflower	4	"

Pulverize fine, and mix.

Dose. — A tea-spoonful every hour till it operates.

Use. — This preparation has been celebrated as a remedy in the treatment of bilious colic.

COMPOUND POWDER OF MANDRAKE. — Take of pulverized mandrake, pulverized spearmint, cream of tartar, equal parts. Mix.

Dose. — A tea-spoonful, in tea or syrup.

Use. — Useful in diseases of the liver, dyspepsia, obstructed menses, dropsy, in venereal diseases, and in every taint of the system.

COUGH POWDER.

Take of Capsicum	2	parts.
Ipecac	2	"
Pulverized Opium	1	"

Mix, and incorporate well together.

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Dose. — Five grains, every four hours, mixed with honey.

Use. — The above will allay irritation of the lungs when all other means prove unavailing. Given in severe inflammation of the lungs and obstinate coughs, where other means afford no relief.

21. **Salves.** — Salves are medicines, of proper consistence for spreading on linen or muslin, designed for external use, for burns, ulcers, etc. They are formed by uniting wax, resin, or oil with some remedial agent, either vegetable or some of the metallic oxides, such as red lead. They require to be made of a little harder consistence for summer than winter, and which may be done by adding or diminishing the quantity of oil.

Salves designed for ulcers should be renewed about twice a day.

BLACK PLASTER, OR HEALING SALVE.

Take of Olive oil . . . . . 3 quarts.
Common resin . . . . . 3 ounces.
Beeswax . . . . . 3 "

Melt these articles together, and raise the oil almost to boiling heat; then gradually add of pulverized red lead two and a quarter pounds, if it be in the winter; if in the summer, two and a half pounds. In a short time after the lead is taken up by the oil, and the mixture becomes brown or a shining black, remove from the fire; and, when nearly cold, add of pulverized camphor half an ounce.

It should remain on the fire until it forms a proper consistence for spreading, and which may be known by dipping a spatula or knife into it from time to time, and suffering it to cool.

Use. — We have found this salve superior to every other, where applications of this kind are required. It has an excellent effect in burns, fever sores, scrofulous, fistulous, and all other ulcers.

It should be spread thin, on a piece of linen, and renewed once or twice a day.

Green Salve. — Take of turpentine and bayberry tallow, half a pound each. Dissolve together, and form into a salve; add sweet oil, if necessary.

Use. — This salve is designed for scrofulous ulcers.

Yellow Salve. — Take one bushel of the roots of the baptisia tinctoria, or wild indigo weed, and boil till the strength is out; then strain, boil, and skim; add ten pounds of fresh butter, three pounds of beeswax, and one and a half pounds of mutton tallow; then boil the water out, and strain till clear.

Use. — This salve is used by Dr. Bone for all kinds of ulcers. It is cleansing, detergent, discutient, etc. It makes a very handsome and efficacious salve wherever one is required, especially for venereal sores.

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22. **Syrups.** — Syrups are liquids containing the properties of certain vegetables in a very concentrated state: they are prepared by boiling the ingredients until their strength is extracted and much of the watery portion evaporated; then adding a sufficient quantity of clarified sugar to prevent fermentation.

Syrup is an excellent form to administer many kinds of medicines. They should always be kept in a cool place.

In consequence of the oleaginous and other peculiar properties of most, or all vegetables, water is not sufficient to extract their virtues; it will be necessary to use spirits. The two menstruums combined answer this purpose admirably: after the alcohol has extracted the component parts of the plants or roots, it is evaporated by boiling, when no danger need be apprehended from its stimulating effects.

ALTERATIVE SYRUP.

Take of Sarsaparilla	6	pounds.
Guaiacum shavings	3	"
Sassafras-root bark	2	"
Elder flowers	2	"
Burdock-root	2	"

Add one gallon of spirits and one gallon of water; boil, and pour off the liquid; then add water repeatedly, and boil till the strength is obtained; strain, and reduce to sixteen pint bottlefuls; then add twenty-five pounds of clarified sugar. Let it stand twenty-four hours to settle; pour off, and bottle for use.

The sugar may be clarified by adding to it half its weight of water, then a few eggs, and boiling till no more scum rises.

Dose. — A wine-glassful three or four times a day.

Use. — This syrup, the alterative, we use in a great variety of cases. In syphilitic or venereal diseases, rheumatism, and chronic inflammation of the liver, we could not dispense with it; we also use it in the treatment of scrofula, which presents itself in so many shapes. In some of the cutaneous diseases we find it very effectual: in every species of ulcer it is also valuable; white swelling, necrosis, rickets, salt rheum, or herpes; and, in short, we have found it very useful in every taint of the system, from whatever cause it may arise. It appears to act upon all the secretions and excretions. A tea of yellow dock may be taken with it: half an ounce of the *hydriodate of potash* to every bottleful is a valuable addition.

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VEGETABLE SYRUP.

Take of Liverwort . . . . . 1 pound.
Solomon's seal . . . . . 1 "
Skunk cabbage . . . . . 1 "
Bloot-root . . . . . ½ "
Water hoarhound . . . . . 1 "

Add a sufficient quantity of water; boil, and pour off the water till the strength is obtained; strain, and boil to twenty pint bottlefuls, and add twenty pounds of strained honey; remove from the fire, and add one pint of brandy; let it settle, and bottle for use.

Dose. — A wine-glassful three or four times a day.

Use. — This preparation is used in every variety of pulmonary disease, and particularly, however, in hæmoptysis (bleeding at the lungs) and asthmatic affections.

SCROFULOUS SYRUP.

Take of Yellow dock-root . . . . . 2 pounds.
Bark of bitter-sweet root . . . . . 2 "

Bruise, and boil till the strength is obtained; then strain, and boil to twelve pint bottlefuls; add sugar sufficient to prevent fermentation.

Dose. — A wine-glassful three times a day.

Use. — This syrup is useful in scrofula and herpetic affections.

WHITE POPPY SYRUP. — Take of the capsules of white poppy, infuse them in warm water for twelve hours; then boil and strain, and add sufficient sugar to preserve it.

This forms a good anodyne, particularly for infants and children.

Prepared in this manner, there appears to be less of the narcotic property of the herb, than when prepared with spirits.

Dose. — The same dose is, therefore, required.

Use. — It relieves coughs and pains similar to paregoric, and possesses about the same strength.

BLACKBERRY SYRUP. — Take two pounds of the bark of the root, well cleansed or washed, and add a suitable quantity of water; then boil two hours. Pour off the liquid; then add more water; and thus continue to boil and pour off until all the strength is extracted; then strain, and add all the boilings together. Simmer to two quarts; strain; then add four pounds of loaf sugar, and, when cool, add half a pint of best French brandy.

Dose. — A table-spoonful three times a day, fasting. If it does not arrest the disease after taking it a few days, gradually increase the dose, as the stomach can bear it.

Use. — This is a very valuable syrup in bowel complaints, particularly the chronic form. It will effect a cure when every other

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means fail. It appears to possess specific virtues, different from all other vegetables.

A jelly is made of the fruit by bruising it, pressing out the juice, straining, and adding sugar, which is useful to mix with water, and to drink.

HOARHOUND SYRUP. — Take of the leaves of hoarhound, dried, two ounces; infuse them for twenty-four hours in half a pint of boiling water, and as much spirits; strain, and add quarter of a pound of honey and one tea-spoonful of the essence of lemon.

Dose. — For an adult, one or two table-spoonfuls every two hours.

Use. — This is recommended for hoarseness, asthma, complaints of the breast, lungs, etc. It promotes the fluid secretions in general, and, if used very freely, will loosen the mucus.

NEVER-FAILING SYRUP FOR THE DYSENTERY. — Rhubarb and wild cherry bark, a handful; four table-spoonfuls of sugar; simmer a while.

Dose. — Give a table-spoonful every fifteen minutes until the pain ceases. Make it fresh every day, and add a little brandy.

The above is a genuine "Indian physician's" receipt.

EXPECTORANT SYRUP. — A handful of St. John's-wort; one of sage. Make a syrup.

Dose. — For a child six months old, a tea-spoonful; for one of six years old, give a table-spoonful every fifteen minutes.

COUGH SYRUP. — Take of Iceland moss, two ounces; four poppy heads; one table-spoonful of barley (whole); put in three pints of water, and boil down to two; strain. Then dissolve one pound brown rock candy.

Dose. — A table-spoonful whenever the cough is troublesome.

Use. — Useful in tickling cough.

23. **Spirits.** — Spirits are similar to tinctures; they are usually compounded of several ingredients. The principal menstruum is alcohol, either pure or diluted: sometimes spirits or vinegar alone are used to prepare this class of medicines.

COMPOUND SPIRITS OF LAVENDER (CALLED LAVENDER COMPOUND).

Take of Flowers of lavender	2	drachms.
Nutmeg	2	"
Mace	2	"
Cloves	2	"
Cinnamon	2	"

Pulverize, and add a quart of spirits.

Dose. — One or two tea-spoonfuls may be taken often, in a little water or tea.

Use. — This pleasant, aromatic preparation is useful in debility,

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fainting, hysterics, and all nervous affections, pain in the breast, flatulence, etc.

SPIRITS OF CAMPHOR.

Take of Gum camphor . . . . . 1 ounce.
Alcohol . . . . . 1 pint.

Mix.

Dose. — Half a tea-spoonful may be taken in a little water, sweetened.

Use. — This preparation contains all the virtues of camphor: it is useful in flatulence, pain or sickness of the stomach, colic, cramp, etc. Combined with equal parts of spirits of lavender and essence of peppermint, it becomes more efficacious.

24. **Draughts.** — Stimulating draughts are employed with the same intention as the common blister, to produce counter-irritation; and they often give relief very speedily in internal pains and inflammation. Mustard poultices or plasters act much more quickly than blisters, and are free from that inconvenience and distress which arise from the latter. They should be applied sufficiently strong to produce a little pain, or to redden the skin; after which they may be removed, and applied near the same place. They are excellent to relieve pain and inflammation of the head in febrile and other diseases; are very useful to equalize the circulation in very many complaints.

Mustard Draught. — Take of mustard, and rye, Indian, or oat meal, equal parts. Form it into a proper consistence by the addition of vinegar.

Use. — This plaster answers all the purposes of a blister, without its being attended with any of the distressing effects which generally result from its application. They should be made sufficiently strong to redden, but not to break, the skin. They may be very often changed from place to place with a good effect. They are very valuable, applied to the feet, to cause revulsion or equalize the circulation; hence they are useful in fevers, inflammation, etc.

Garlic and Onion Draught. — Bruise garlic or raw onions, and apply.

Use. — Useful in the same diseases as the preceding, in pneumonia or inflammation of the lungs, etc.

25. **Tinctures.** — Tinctures are certain active ingredients, principally vegetable substances, which are imparted to alcohol, spirits, or wine. Tinctures are excellent for administering a great variety of medicinal agents; but in some cases there may be an objection to them, in consequence of the spirits which they contain. Substances yield their virtues more readily to spirits by the addition of heat.

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HYDRAGOGUE TINCTURE.

Take of Bark of sweet elder . . . . . 1 pound.
Good wine . . . . . 1 gallon.

Let it simmer an hour; strain, and bottle.

Dose. — A wine-glassful three or four times a day.

Use. — This tincture is usefully administered in dropsical affections, particularly in abdominal dropsy. It has cured many without any other ingredient.

BOTANICAL TINCTURE.

Take of Gum guaiacum . . . . . 1 ounce.
Niter . . . . . 1 "
Camphor . . . . . 2 drachms.
Balsam tolu . . . . . 2 "
Spirits . . . . . 2 quarts.

Mix.

Dose. — Two tea-spoonfuls three or four times a day, to be taken in a tumbler of prickly-ash tea.

Use. — This formula is highly extolled in rheumatism and many external painful chronic affections.

TINCTURE OF LOBELIA.

Take of Pulverized lobelia, seeds or pods . . . . . 2 ounces.
Spirits, ... 2 quarts.

Let it stand two or three days, or longer, and filter.

Dose. — From a tea-spoonful to a table-spoonful, as often as necessary.

Use. — This tincture is an excellent remedy in the treatment of asthma, croup, and pulmonary affections. It is also given in tetanus and poisons.

TINCTURE OF HOPS. — Saturate alcohol with the pollen of hops.

Dose. — From one to two tea-spoonfuls, in milk.

Use. — Useful in after-pains, and in cases where opium cannot be taken.

TINCTURE OF BALSAM TOLU.

Take of Balsam Tolu . . . . . 1 ounce.
Alcohol . . . . . 1 pint.

Let it stand one week, and filter.

Use. — This is combined with the compound tincture of senna, for the *water-brash*.

TINCTURE OF CASTOR.

Take of Castor . . . . . 2 ounces.
Spirits . . . . . 1 quart.

Let it digest one week.

Use. — Useful in nervous diseases and suppressed menses.

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ANTI-SPASMODIC TINCTURE.

Take of Tincture of lobelia . . . . . 1 pint.
Tincture of capsicum . . . . . 1 "
Compound tincture of valerian or nervine . . . . . 3 gills.

Mix, and bottle for use.

Dose. — From a tea-spoonful to a table-spoonful, in a gill of water or herb tea; to be given every twenty minutes.

Use. — Dr. Booth, of Alabama, states that he has found it an infallible remedy for fever and ague. He gives a tea-spoonful just before the *cold stage* of the disease; to be repeated every twenty minutes until nausea or vomiting takes place.

This tincture is also recommened for fits, spasms, and all violent attacks of disease; suspended animation from drowning, hanging, lightning, or any other cause. Also good in cases where poisonous substances have been taken.

COMPOUND TINCTURE OF VALERIAN OR NERVINE.

Take of Skull-cap . . . . . 4 ounces.
American valerian, or ladies' slipper . . . . . 4 "
Best French brandy . . . . . 1 quart.

Bruise the plants, and add to the brandy.

Dose. — From a tea-spoonful to a table-spoonful occasionally, in sweetened water.

Use. — This tincture is useful in all nervous diseases.

BALM OF GILEAD.

Take of Balm of Gilead buds, bruised . . . . . 2 ounces.
The strongest Jamaica spirits . . . . . 1 quart.

Digest a few days.

Dose. — From a tea-spoonful to a table-spoonful, mixed with sweetened water. This has benefited many.

Use. — Excellent for colds, coughs, and pain in the breast.

TONIC TINCTURE. (FOR FOUR GALLONS.)

Take of Good sour or hard cider . . . . . 4 gallons.
White oak bark . . . . . 10 ounces.
Horseradish root . . . . . 1 pound.
Seneca snake-root . . . . . 6 ounces.
Carbonate of iron . . . . . 6 "
Golden seal root . . . . . 4 "
Capsicum . . . . . 2 "

Bruise all fine and put in the cider; let it be shaken up every day for eight or ten days.

Use. — A sure remedy for intermittent fever, debility, and impoverished state of the blood. It is excellent in obstructed menses, and the dropsy, worms, etc.

Dose. — For an adult, half or two thirds of a wine-glassful three times a day; for children, according to their age.

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The above was communicated by Isaac S. Smith, M. D., of this city, a very judicious physician of the *Reformed School of Medicine*.

STIMULATING DROPS, HOT DROPS, TINCTURE OF CAPSICUM.

Take of African capsicum or cayenne pepper . . . . . 1 ounce.
Best French brandy . . . . . 1 pint.

Mix.

Dose. — From half to a tea-spoonful, in a plenty of sweetened water.

Use — Good internally and externally; for pain in the stomach and bowels, cold and langnid circulation, etc. Repeat, if necessary.

PHYSICAL TINCTURE, ELIXIR SALUTIS, OR COMPOUND TINCTURE OF SENNA.

Take of Alexandria senna . . . . . 2 ounces.
Jalap . . . . . 1 "
Fennel seeds . . . . . ½ "
Spirits or best brandy . . . . . 1 quart.

Let it stand one week, and then strain.

Dose. — A tea-spoonful or two to a child one year old, mixed with a little sweetened water.

Use. — A mild, but effectual, purgative. This forms an excellent purgative, particularly for children. It acts mildly, but effectually, cleansing well the stomach and bowels; besides, it is very pleasant.

LAUDANUM, OR TINCTURE OF OPIUM.

Take of Turkey opium . . . . . 2 ounces.
Proof spirits . . . . . 1 quart.

Let it stand a week.

Dose. — From twenty to sixty drops.

Use. — Given as an anodyne.

COMPOUND TINCTURE OF CAMPHOR, OR PAREGORIC.

Take of Opium . . . . . 1 drachm.
Flowers of benzoin . . . . . 1 "
Camphor . . . . . 2 scruples.
Anise . . . . . 1 drachm.
Proof spirits . . . . . 1 quart.

Dose. — A tea-spoonful for a child a year old.

Use. — Given to allay irritation or pain, for flatulence or wind, in coughs, etc. This preparation should be sparingly used.

TINCTURE OF STRAMONIUM.

Take of Pulverized seeds of stramonium . . . . . 2 ounces.
Proof spirits . . . . . 1 quart.

Let it stand one week.

Dose. — Twenty-five drops twice a day. In cases of fits it may be increased until the pupil of the eye becomes somewhat dilated, or until it causes a little pain or dizziness in the head.

Use. — It is useful in epilepsy, neuralgia, palpitation of the heart, etc.

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EXPECTORANT AND ANTI-SPASMODIC TINCTURE.

Take of Capsicum . . . . . ½ ounce.
Blood-root . . . . . 1 "
Lobelia seeds . . . . . 1 "
Ipecac . . . . . 2 "
Wine, spirits, or metheglin . . . . . 3 pints.

Let it stand one week. When taken, mix with water.

Dose. — A table-spoonful twice a day, or as often as may be necessary.

Use. — It is useful in inflammation of the lungs, pleurisy, whooping-cough, consumption, fits, etc., and when there is any difficulty of expectoration.

TINCTURE OF COHOSH.

Take of Black cohosh, the root . . . . . 3 ounces.
Proof spirits or wine . . . . . 1 quart.

Let it stand a few days.

Dose. — Half a table-spoonful three or four times a day.

Use. — Useful in obstinate coughs, rheumatism, and impurity of the blood. It is highly rccommended for whooping-cough.

TINCTURE OF FOX-GLOVE.

Take of Fox-glove . . . . . 1 ounce.
Proof spirits . . . . . 1 pint.

Digest one week, and strain.

Dose. — From fifteen to twenty drops, to be given three or four times a day, in parsley tea.

Use. — Used for inflammatory diseases. It lessens the pulse, by diminishing arterial excitement, and thereby prevents the necessity of blood-letting. It is recommended in inflammation of the lungs. It is also very valuable in dropsy of the chest.

SUDORIFIC TINCTURE OR SWEATING DROPS.

Take of Ipecac . . . . . 2 ounces.
Saffron . . . . . 2 "
Camphor . . . . . 2 "
Virginia snake-root . . . . . 2 "
Opium . . . . . 2 "
Holland gin, or Jamaica spirits . . . . . 3 quarts.

Let it stand two weeks, and filter.

Dose. — One tea-spoonful, given in a tumblerful of catnip tea, every hour or two till it produces perspiration.

Use. — This medicine is probably unsurpassed in fulfilling the indications for which it is given, which is generally to produce free perspiration. One or two doses, aided by warm infusions, and bathing the feet, cause a copious perspiration. Hence it is useful in a variety of diseases: in fever, inflammation, etc., no medicine more certain in its operation.

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TONIC WINE TINCTURE.

Take of	Peruvian bark	2 ounces.
	Wild cherry-tree bark	1 "
	Cinnamon	1 drachm.
	Cloves	1 "
	Nutmegs	1 "
	Capsicum	1 tea-spoonful.
	Sulphur	1 ounce.
	Wine	2 quarts.

Let it stand a while. All the articles to be pulverized.

Dose. — A wine-glassful, every two or three hours.

Use. — This mixture we have found an infallible cure for intermittent fever, or fever and ague. It removes it when all other means fail.

26. **Essences.** — Essences are made by adding alcohol to the essential oils, in proportion of one ounce of oil to sixteen ounces of alcohol. They are useful externally, to relieve pain, and used with advantage internally, for many complaints.

ESSENCE OF PEPPERMINT.

Take of	Oil of peppermint	1 ounce.
	Alcohol	1 pint.

Mix.

Dose. — A tea-spoonful. Useful in pain of the breast, cramp, sickness of the stomach, etc.

ESSENCE OF HEMLOCK. — Made in the same manner.

Dose. — Twenty-five or thirty drops, on sugar or in tea.

Use. — Useful in rheumatism and pain in the breast; also for sprains, etc.

ESSENCE OF SASSAFRAS. — Made in the same manner.

Use. — It is useful in gout and rheumatism, pain in the breast, lumbago, sciatica, contusions, etc.

All other essences are made in the same manner, and their virtues are the same as the oils from which they are made.

27. **Suppositories.** — These are solid remedies, of the conical form, intended to be introduced into the rectum, and to remain there for a certain length of time, to act as stimulants and discutients.

SUPPOSITORIES.

Take of	Aloes, pulverized	½ ounce.
	Gum myrrh, pulverized	½ "
	Castile soap, shavings	½ "
	Sugar lead	½ "
	Oxide of copper	½ "
	Vegetable caustic	½ "

Pulverize, and add two quarts molasses; put the whole in an iron

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vessel, and simmer until, upon trial, the mass becomes sufficiently hard to form into small cones, about the size convenient for introduction per anus.

One or two, introduced up the rectum daily, are excellent for the piles and strictures of the bowel.

28. **Washes.** — Washes, or lotions, are certain liquids in which are suspended medicinal agents, and designed principally for external use.

HERPETIC WASH. — Take poke root, lobelia, and yellow dock, pulverized, in equal parts. Bruise, and add a table-spoonful to one pint of vinegar or spirits.

Use. — Bathe often for eruptions of the skin.

ALKALINE WASH. — Ley made of hickory ashes, weak; or, which may be better for some reasons, a solution of sal soda.

Use. — These are remarkably efficacious for fevers, by bathing the surface often. Extraordinary benefit attends this practice; equal, if not superior, to internal medicine.

OPHTHALAMIC, OR COOLING WASH.

Take of Borax, pulverized . . . . . 1 ounce.
Rain or spring water . . . . . 1 quart.

Let it stand twelve hours.

Use. — This forms a very cooling and useful wash for all kinds of inflammation, particularly the eyes; also sore and inflamed nipples, canker, and sore mouth and throat. It may be applied freely and often.

REFRIGERANT, OR COOLING LOTION OR WASH.

Take of Sugar of lead . . . . . 1 drachm.
Rain water . . . . . ½ pint.

Mix.

Use. — This wash is cooling or refrigerant, and serviceable in inflammation, particularly erysipelatous.

SALINE WASH.

Take of Fine salt . . . . . 1 ounce.
Spirits . . . . . ½ pint.
Vinegar . . . . . ½ "
Rain water . . . . . ½ "

Or equal parts. Mix.

Use. — This makes a good refrigerant or cooling wash for many kinds of inflammations. We are in the habit of prescribing it, particularly in inflammation of the brain, dropsy of the head, etc. Sometimes it is applied tepid, at other times cool; but seldom cold, except in very urgent cases.

ASTRINGENT WASH. — Take of dried bark of large hemlock, up-

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land sumach-root bark, witch-hazel bark, and white-oak bark, equal parts. Make a strong decoction.

Use. — This is useful to inject in fluor albus, to wash the parts in prolapsus ani and uteri, or falling of the bowel and womb. An excellent method is, to wet a sponge, tie a piece of tape to it, and keep it up the uterus till the complaint is cured. A decoction of oak and alum will answer.

29. **Mixtures.** — Mixtures are a combination of medicines in a liquid form, or when substances are diffused through liquids by means of mucilage, or syrup.

SALINE PHYSIC, WHITE LIQUID PHYSIC.

Take of	Epsom salts	½ pound.
	Rochelle salts	½ ounce.
	Sulphate of potash (vitriolated tartar)	½ "
	Common salt	½ "

Mix, and add one gallon of boiling water: when cool, add one ounce of muriatic acid, and one ounce of nitric acid.

Dose. — From one to two table-spoonfuls every two hours till it purges, in cold water.

Use. — A cooling purgative; good to allay sickness at the stomach, vomiting, for colic, bilious and bowel complaints, etc. A tumbler-ful of warm herb tea to be taken after each dose.

ANTI-CHOLERIC AND ANTI-SPASMODIC MIXTURE.

Take of	Camphor mixture	4 ounces.
	Essence of peppermint	4 "
	Tincture of capsicum	1 drachm.
	Syrup of ginger	½ ounce.

Mix.

Dose. — One table-spoonful every quarter, half, or one and two hours, according to the urgency of the symptoms.

Use. — This mixture is useful in the malignant or spasmodic cholera, cramp of the stomach, fits, etc.

NERVOUS MIXTURE.

Take of	Mixture or liquid carbonate of ammonia	½ drachm.
	Mint water, distilled	1½ ounces.
	Compound tincture cardamon	½ "

Mix.

Dose. — Two table-spoonfuls, three times a day.

Use. — Useful in fainting, hysterics, debility, and all nervous cases.

NEUTRALIZING MIXTURE, NEUTRALIZING CORDIAL OR PHYSIC. — Take of rhubarb, saleratus, peppermint plant, and cinnamon, pulverized, equal parts. To a large tea-spoonful add half a pint of boiling water; when cool, strain, sweeten with loaf sugar, and add a table-spoonful of brandy.

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Dose. — One or two table-spoonfuls every quarter, half, or one or two hours, according to symptoms.

Use. — This is one of the most valuable preparations known for cholera morbus, cholera infantum, or summer complaint of children, diarrhea, dysentery, etc. Its operation and action appear to be a specific, if not infallible. It is excellent for pregnant women, to allay sickness and regulate the bowels.

30. **Electuaries.** —

PILE ELECTUARY.

Take of	Cream of tartar	1 ounce.
	Jalap, pulverized	1 "
	Electuary of senna	2 "
	Cream or flowers of sulphur	½ "
	Nitrate of potash	½ "

Add molasses sufficient to make a pill or thick mass; roll into small cakes, quarter of an inch square; dissolve one in water and take every night; or it may be formed into pills, common size, and four taken night and morning.

This makes a very superior remedy for the blind and bleeding piles. It usually excels all others; it corrects a faulty state of the biliary organs, which produces costiveness, and, subsequently, the piles.

ELECTUARY OF SENNA, LENITIVE ELECTUARY.

Take of	Alexandria senna leaves	8 ounces.
	Figs	1 pound.
	Tamarind pulp, obtained by macerating in water	1 "
	Pulp of prunes, obtained in the same manner	1 "
	Coriander seeds	4 ounces.
	Refined sugar	2½ pounds.

Powder the senna leaves with the coriander seeds, and separate by sifting ten ounces of the mixed powder; boil the remainder with the figs, in four pints, until it is reduced to half; then press out and strain the liquor; evaporate the liquor to half a pint, and add the sugar to make a syrup; lastly, mix the pulp gradually with the syrup, and having added the sifted powder, mix the whole together.

This is used for costiveness; a piece the size of a hickory nut to be eaten. It enters into the pile electuary. It is generally best to purchase it already prepared. The English is very superior.

Certain Cure for Epidemic Cholera. — I here propose to give a method of treating cholera so simple, so rapid, so certain, that it should commend itself to every unprejudiced mind. I assert that it will cure when stimulants, opiates, and the vast list of experimental remedies which have been used in this complaint utterly fail. Even when the disease has progressed so

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far that eminent physicians have given up the case as hopeless, I have seen restoration by this mode take place almost instantaneously. Time — even a few minutes — often decides the fate of a person attacked; therefore speed is a great desideratum, and the treatment here recommended is the quickest on the face of the earth.

In cholera, the serum or watery part of the blood runs off, leaving only the *crassamentum*, or thick portion. This is shown from the fact that the bodies of those who die from the disease present the extraordinary peculiarity of being without fluid. Nothing remains but the thick parts of the blood — mere clots or coagula in the large vessels, and dark, grumous blood in the smaller ones. The first indication is to stop this enormous hemorrhage. Medicines administered by the mouth can not meet the case like going directly to the seat of the disease — the bowels. For this purpose use this injection. Its simplicity is such that a child can give it. It is a never-failing cure: —

Tincture kino	1 ounce.
Tincture opii	4 drachms.
Amylum (common starch)	1 ounce.
Tepid water	6 ounces.

Mix. Inject slowly into the bowels. The injection mixture should be of the consistency of thin gruel. If it should come away it must be immediately repeated. If the injection be properly administered and in sufficient quantity it will stop the discharge from the bowels in fifteen minutes, and nothing will pass them for several days. The patient is then safe.

A weak mixture of chloroform, spirits camphor and turpentine, may also be taken by the mouth. It is the only internal remedy that I have ever seen amount to much.

If the above injection can not be quickly obtained, a preparation of starch water, containing a solution of alum or laudanum, forms a cheap, convenient, and effective injection.

By this treatment I will pledge all that I am worth that I can cure more cases of cholera than all other systems of medicine combined can possibly effect.

We have given above numerous compounds for diseases; but a few, well selected, are sufficient; still, as all understand, what may be good for one, has but little or no effect upon another. It is desirable to have them all in our possession in case of need.

I wish to call the reader's attention to the system of adulteration so extensively practiced; as I have seen many of these compounds prepared, with such ingredients as to be entirely different from the

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genuine preparations, and having no virtue whatever. Therefore, unless the ingredients are pure, and gathered and cured in proper season, having all their virtues retained, their effects upon the system cannot be relied upon. The reformed system of medicine has suffered more through adulterated and improperly gathered and cured vegetables, than through any other cause. We therefore urge upon all to use only properly gathered, pure, and cured vegetables; then these receipts can be relied upon fully. I employ agents specially to procure such as I need in all chronic, seated, or lingering complaints; while this plan is very expensive, the success met with more than repays for all extra outlay. I do not hesitate to say that my whole success through life is owing to having taken the precaution to have remedies, which, when given, could be relied upon.

CHAPTER XXXIV.

DIGESTION AND DIET.

THE only direct evidence upon the digestibility of food in the human stomach, of indisputable import, is that published by Dr. Beaumont, as the result of his observations in the case of Alexis St. Martin. The few following statements, expressing the digestibility of various articles of ordinary consumption, are abstracted from the tables containing the results of his carefully conducted experiments: —

Articles of Vegetarian Diet.	H.	M.	*Articles of Flesh Diet.*	H.	M.
Barley soup	1	30	Chicken broth	3	00
Bean soup	3	00	Mutton soup	3	30
Soft boiled rice	1	00	Chicken	3	15
Boiled tapioca, barley, milk	2	00	Roast beef, beefsteak	3	00
Bread (fresh)	3	15	Roast mutton	3	15
Eggs (variously cooked)	2	37	Broiled veal	4	00
Potatoes, beans, parsnips	2	30	Roasted duck	4	15
Custard	2	45	Roasted pork	5	15

Dr. Beaumont further remarks, that "one American can consume as much food as two Highlanders or two Swiss, although the latter are among the stoutest of the race. Intemperate eating is, perhaps, the most universal fault we commit. We are all guilty of it, not occasionally, but habitually, and almost uniformly, from the

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cradle to the grave. It is the bane alike of our infancy and youth, our maturity and age. It is infinitely more common than intemperance in drinking; and the aggregate of the mischief it does is greater. For every reeling drunkard that disgraces our country, it contains one hundred gluttons — persons, I mean, who eat to excess, and suffer by the practice." "How, indeed," he afterwards exclaims, "can the case be otherwise, while children and youth are regularly taught, hired, bribed, or tempted to over-eat themselves from their birth! Do you ask me for evidence in proof of this charge? Go to our dining-rooms, nurseries, fruit-shops, confectioneries, and pleasure-gardens — go even to sick-rooms — and you will find it in abundance. You will witness there innumerable scenes of gormandizing, not only productive of disease in those concerned in them, but in many instances offensive to beholders. The frightful mess often consists of all sorts of eatable materials that can be collected and crowded together; and its only measure is the endurance of appetite and the capacity of the stomach. Like the ox in rich pasture-ground, or the swine at his swill-trough, men stow away their viands until they have neither desire nor room for any more."

Even in sickness, when Nature obviously enjoins abstinence, by depriving the sick of an appetite, the nurse will often tease the patient to eat some nicely-prepared food; urging, as a reason, that he can't get well, or will become worse, without it. Beware of the bait! Abstinence is often much better than medicine; when food is necessary Nature will soon call for it.

Galen, who flourished many hundred years ago, maintained excellent views on diet, worthy of imitation. He remarks: "I beseech all persons who shall read this work, not to degrade themselves to a level with the brutes or the rabble, by eating and drinking promiscuously whatever pleases their palates, or by indulging their appetites of every kind. But, whether they understand physic or not, let them consult their reason, and observe what agrees and what does not agree with them; that, like wise men, they may adhere to the use of such things as conduce to their health, and forbear from everything which they find, by their own experience, to do them harm; and let them be assured that, by a diligent observation and practice of this rule, they may enjoy a good share of health, and seldom stand in need of physic or physicians."

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CHAPTER XXXV.

PHYSICIANS AND MEDICINE, FROM THE EARLIEST RECORD.

For the facts in this highly interesting chapter, we are indebted to many celebrated writers, among whom are Bostock, Bell, and Trall.

Medicine first became a profession among the Egyptians. Its origin, however, is involved in fabulous and impenetrable obscurity. In Egypt and in most of the earlier nations the priests were the practitioners of the healing art.

First Physicians. — The Egyptian priests practiced the healing art by means of magical incantations, which, of course, produced their good or bad impressions through the medium of the imagination, the efficacy of their prescriptions bearing a pretty exact ratio to the superstition and credulity of their patients. The medical practice of the Assyrian priests consisted mainly of magical arts, while the actual learning they possessed was carefully concealed in a mystical technicality. Among the early Jews the priests, who were the physicians also, treated the leprosy and other diseases with various ceremonies to affect the imagination, at the same time enforcing judicious regulations to avoid the sources of contagion, and promote personal cleanliness.

Grecian. — In Greece the genius of Hippocrates first caused medicine to be regarded as a science, though Chiron, who lived about 1300 B. C., is accredited for having introduced the healing art to his countrymen. Æsculapius, a pupil of Chiron, is considered the first person who made medicine an *exclusive* study and practice. His sons, Machaon and Podalirius, are celebrated in Homer's Iliad for their medical skill, though, as they were employed principally as surgeons in the Greek armies, their medication was doubtless mostly confined to crude yet simple methods of dressing wounds and recent injuries, which were exceedingly common in that warlike age. Ablutions, bandages, fomentations, ointments, mechanical support, and the application of balsamic and astringent herbs, with the occasional use of wine or other stimulating substances, constituted their whole and their ample materia medica.

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Empirical. — For several centuries succeeding the age of Æsculapius and his sons, we have no record that medicine made the least progress. Numerous temples were erected in honor of Æsculapius, who was deified as the god of medicine; and in these temples a practice obtained among the patients of recording on a tablet, for the benefit of others, a statement of their diseases, and the means by which they were relieved, thus converting the temples into schools of medicine. But then there were men of superior sagacity and inordinate selfishness, who desired to turn the common knowledge to individual advantage. The temples of Cos and Gnidos became rival establishments. One assumed to be philosophical, by uniting reason with experience, while the other professed to be governed solely by facts and observations. Thus arose two medical sects, the Dogmatists and the Empirics, who exist to this day, and are merely routine imitators, without a particle of pretension to any rational system.

Philosophers. — Pythagoras, in the sixth century before Christ, was the pioneer of a class of scholars of general information and philosophical mind, who gave much attention to the investigation of the structures, functions, and diseases of the human body. He established a school at Crotona, to which students resorted from most parts of Greece and Italy. More than twenty years of his life were spent in Egypt, Chaldea, and Eastern Asia, and he prosecuted the study of comparative anatomy by dissecting animals. His pupils were not exclusively devoted to medical studies, but were among the men most celebrated for general erudition in that and in the succeeding age.

Father of Medicine — HIPPOCRATES. — One of the most sagacious, observing, and industrious men that ever lived was the "Coan Sage," who has been entitled the "Father of Medicine." Hippocrates was a pupil of Herodicus, brought up among the Asclepiadæ, in the temple of Cos. He travelled much in foreign countries, devoting himself to the study and practice of medicine with untiring energy, and his works became text-books for many ages; even to this day his leading doctrines are extensively recognized. His practice has been called a rational empiricism; in other words, a careful observation of facts, and a reasoning process based upon their consequences.

"Irregular." — Subsequent to the age of Hippocrates, medicine remained stationary for several centuries. His sons, Thessalus and Draco, his son-in-law Polybus, Diocles of Carystus, and Praxagoras of Cos, are the only names distinguished among his im-

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mediate successors. One of their contemporaries was a Dr. Chrysippus, who opposed bleeding and the employment of active purgatives; he was, however, regarded as a sort of "irregular," who did not pay due deference to the authority of great names.

Plato and Aristotle, like most of the ancient Greek philosophers, were conversant with the medical doctrines of their day, though not practicing physicians. The latter published the first works on anatomy and physiology, writings, though full of refined vagaries, held a strong influence over the public mind for centuries after his death.

Alexandrian. — The Ptolemies founded a medical school at Alexandria about 300 B. C. The most famous of its professors were Erasistratus and Herophilus, who dissected bodies of criminals obtained of government. Erasistratus, having been a pupil of Chrysippus, adopted his opinions against bleeding and violent remedies, professing to trust nature more and art less. Herophilus paid particular attention to the action of the heart, and was the first to give anything like an accurate description of the various kinds of pulse.

Soon after the institution of the Alexandrian school a division of medical men occurred, by which the practice of physicians proper, or dietetics, and druggists, and surgeons, became distinct vocations; and not long after this event the great schism occurred which divided medical men into two sects, the Dogmatists and Empirics. All the medical men of the day, and for several succeeding ages, were attached to one or the other of these rival parties.

Regulars. — After the decline of Grecian literature, medicine, as a distinct pursuit, made no progress for a long time. During the warlike days of Rome, she was, for six hundred years, without a physician who made the healing art a profession. The superstitions and ceremonies of the Greeks were transported to Rome, and plagues and other epidemics were attempted to be stayed by such rites as would propitiate the offended deities. Pliny states that about two hundred years before the Christian era, the first regular physician, by the name of Arcagathus, established himself as a practitioner at Rome. He was received at first by the people with respect and even reverence, but so severe was his practice, and so unsuccessful its results, that disgust succeeded admiration, and caused the citizens to prohibit the practice by law, and banish its professors from the land.

About a century after, Asclepiades, of Bithynia, a pupil of Epicurus, went to Rome as a teacher of rhetoric. Being unsuccessful, he turned his attention to medicine, by which he acquired great popularity. His practice was very mild and cautious, and as he de-

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nounced with vehemence the harsh measures of some of his predecessors, he was then regarded by his contemporaries, and is now by medical historians, as a sort of irregular, or quack. He was the first to arrange diseases into the classes of acute and chronic. His pupil, Themison, of Laodicea, founded a third medical sect, called the Methodic, who adopted a kind of eclectic system, combining parts of the systems of the Dogmatists and Empirics. Like his master, his philosophical notions were mainly derived from Epicurus.

Heroic. — The next individual of note was Thessalus, who lived half a century later than Themison. By pompous pretensions, swelling self-sufficiency, and abundant cunning, he acquired great reputation and wealth; he treated all his predecessors and contemporaries with the utmost contempt, and even took to himself the modest title of the Conqueror of Physicians. He introduced a new method of medical treatment, called *metasynocrisis*, which, unhappily for mankind, has been too much followed by the medical world. It consisted in producing an entire change in the state of the body, instead of merely regulating, correcting, and removing morbid actions and symptoms after the Hippocratic plan.

Soranus and C. Aurelianus are the next Roman physicians of celebrity. They were strict Methodics, and their writings did much to advance the particular notions which they had imbibed; their remedial measures were, however, very mild, and hence generally successful. But it is worthy of especial remark, as evidence of the powerful influence of a preconceived theory over the exercise of judgment, that modern writers, who have generally adopted the heroic notions of Thessalus, condemn the practice of these Methodics for its want of vigor and promptness.

Pneumatics. — During the first two centuries of the Christian era the Methodic sect prevailed, yet the peculiar speculations of different individuals were gradually introduced, causing at length the formation of several subdivisions, or new sects, of medical practitioners, the most prominent of which were the Pneumatics and the Eclectics, or Episynthetics. Pneumatology and Eclecticism are not therefore quite as modern notions as many have supposed.

Eclectics. — The most celebrated of this class was Archigenes, of Appamea. His practice was at Rome, in the time of Trajan. His writings were valuable, and he acquired great and deserved popularity and influence, his cures being most wonderful and astonishing.

Celsus is the first native Roman physician of whom we have any

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account. He wrote several books on medicine, which show that surgery and pharmacy had made considerable progress. It is difficult to class him with either of the sects of his day; in practice he pursued mainly the method of the Asclepiades.

Pharmacopœia. — In the reigns of Claudius and Nero a class of writers became famous by their pharmaceutical preparations. The most notorious among them were Scribonius Largus, who made a book of nostrums and indiscriminate formulæ, and Andromachus, who compounded a medicamentum of sixty-one ingredients. It was called the *theriaca*, and its most essential constituent, from which its name was derived, was the dried flesh of vipers! This preparation has been recommended, by regular physicians, for almost every known disease.

Pliny, though not practically a medical man, was, nevertheless, familiar with all that was taught on the subject in his time.

Dioscorides was a distinguished author at the same period. An elaborate treatise which he wrote on materia medica was the standard production for many ages subsequently.

Galen. — "The name and history of Galen are more familiar to modern practitioners of the healing art than are any other ancient physicians. Thoroughly educated in all the schools of philosophy, he selected from them all, except the Epicurean, which he totally rejected. He was a native of Pergamus, but, after travelling extensively, at the request of the Emperor Aurelius, settled in Rome. His works number nearly two hundred treatises on all subjects directly or remotely connected with medicine. In the formation of opinions he was entirely independent, paying very little respect to authority; and so great was the reputation he acquired for learning, skill, and wisdom, that his opinions were regarded by many as oracles. In theory he was with the Dogmatists, and in practice he professed to venerate and act upon the principles of Hippocrates.

"In Galen's time the Roman empire began to decline; and the general decay of science and literature in the middle ages succeeding, has left little to record in the shape of innovation. Sprenzel has pithily characterized the medical writers of the third and fourth centuries as 'frigid compilers, or blind empirics, or feeble imitators of the physician of Pergamus.' Oribasius, who lived in the fourth century, Aëtius in the fifth, and Alexander Trallianus and Paulus Ægina in the sixth, wrote books which professed but little more than to be compilations of, and commentaries on, the works of Galen."

Arabian. — With the death of Paulus, about the middle of

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the seventh century, terminated the Greek school of medicine. The Arabians, who conquered a large portion of the semi-civilized world, destroyed the immense Alexandrian library, yet the Arabian physicians had adopted the opinions of Galen, and followed his practice implicitly. But a new school soon arose among them, owing to the invention of chemistry, and its being made subservient to medicine. One of the most celebrated Arabian physicians was Rhazes, born at Irak, in Persia, in the ninth century. His writings, though mostly comments on Galen and the Greek physicians, contain an original and elaborate treatise on the theory and treatment of small-pox and measles. In his writings on surgery and pharmacy are found indications of the employment of chemical remedies, which formed so important and so disastrous an era in medical history soon after.

After Rhazes flourished Ali Abbas, a physician and writer, who obtained the title of magician; and about a century later appeared on the stage Avicenna, who acquired a reputation among his countrymen not inferior to that of Galen. He was born at Bokhara, A. D. 980, and was carefully educated in the schools of Bagdad. His published works were numerous.

Mesue the elder, Mesue the younger, and Albucasis were among the last Arabians of distinction who wrote much on medical subjects. Avenzoar, and his pupil Averroes, natives of Spain, wrote voluminously in the Arabic language, and enjoyed great celebrity.

With Averroes terminated the Arabic or Saracenic school of medicine, the great reputation of which is mainly owing to the circumstance that, from the eighth to the twelfth centuries, when all Europe was sunk in deep barbarism, the principal remains of a taste for literature and science existed among the Moors and Arabs.

Monks.—From the twelth to the fifteenth centuries the practice of medicine, in those countries best known to us, was principally in the hands of the monks, whose healing resources were mainly drawn from magical arts and astrological superstitions. The mystery of this system enabled the practitioners to acquire an unbounded influence over the ignorant masses. Chemistry, or, rather, alchemy, was then prosecuted with much ardor, and the pursuit of them led to many experiments and the introduction of many chemical preparations into the materia medica, and, indeed, laid the foundation of the mineral drug system of the present day.

The only medical schools of any note were the Neapolitan, of Monte-Cassino and of Salerno. The latter, which was the first to grant diplomas, maintained some reputation until eclipsed by those

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of Bologna and Paris, in the thirteenth century. About this time anatomy was attentively studied by dissections. The first English physician of note was Anglicanus, who published a work in the early part of the fourteenth century, entitled, "Medicinæ Compendium," made up of trifling disquisitions on insignificant topics.

The European feudal system now began to be shaken by the Crusades; Constantinople was captured by Mahomet the Second, about the middle of the fifteenth century; about thirty years after the ruin of the Byzantine empire the Reformation occurred; and about the same period the art of printing was invented.

The alchemic art was at length transferred from Arabia into the European countries, where it was pursued with as much assiduity as by the Arabs themselves. Medical chairs were established in various universities in Europe during the thirteenth century; medical lectures were given in the universities of Vienna and Paris, and schools were established in Padua, Pavia, Milan, Rome, and Naples. Linacre, who was educated at Oxford, spent some time in Italy and at the court of Florence, and on returning to England succeeded in establishing medical professorships at Oxford and Cambridge, and laid the foundation of the London College of Physicians.

Chemical. — The next important event in medical history was the formation of the chemical sect. Chemistry, after having been employed in various pharmaceutical processes, was applied to physiology, pathology, and therapeutics; hence the origin of chemical doctors. The chemical physicians advanced their theories, which were as wild and extravagant as any preceding ones, with great boldness and assurance, and for a long time the Galenists and Chemists were the rival sects of the medical world. But the Galenists had an ever-present champion in the very name of Galen, who may well be called the Prince of Medical Philosophers. But his system was destined to be overthrown by an adventurous vagrant, who, in all the mental, moral, and physical elements and proportions of a complete and thorough quack, never had his equal on earth.

Prince of Empirics. — And now appeared upon the stage of action an individual — Paracelsus by name — whom the whole world denounces as a base, impudent, and unprincipled charlatan. It is to him that we owe the introduction of the antimonial and mercurial practice, which constitutes the great strength of the popular materia medica, and its terribly devastating power on human constitutions.

Aureolus Phillippus Paracelsus Theophrastus Bombast de Hohen-

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heim, as he delighted to style himself, was born at Enseidlen, in Switzerland, in 1493. His father, who was a physician, took great pains in his education, and he became a proficient in physic and surgery; but becoming charmed with the study of alchemy, his father committed him to the instructions of Trithemius, abbot of Spanheim, who was renowned for knowledge in the secrets of alchemic art.

Paracelsus, by bold pretensions, and a few lucky adventures in the field of medical practice, became celebrated among the learned of his day, and was made a medical professor in Basil, in 1527, where he received for a short time a large salary. In the "pride, pomp, and circumstance" of this honored position, he burned, with great solemnity, the works of Galen and Avicenna, declaring to the astonished and probably admiring multitude that, as he had found the philosopher's stone, mankind had no further use for the medical works of others.

Paracelsus performed some great cures. It is certain that *some* of his great cures were the exact prototypes of many great cures performed daily among us at the present time, and not very much to the advantage of the patients. For example, he cured the celebrated printer of Basil, Jerohemus, of a pain in the heel, after "every thing else had been tried in vain." There is, however, a qualification of the story. The treatment moved the pain from the heel to the toes, which became entirely stiffened, and although the patient had no more pain, he soon died of apoplexy!

In early childhood he was made a eunuch from mutilation by a sow, and as he grew up he became a perfect hater of womankind, while a love of mere notoriety seemed to have become the passion by which he was ruled.

The medical life of Paracelsus may be stated in few words. He surreptitiously appropriated another man's invention as his own, practiced the vilest arts of charlatanry, assumed the most pompous titles, proclaimed that he had discovered a universal panacea, the long-sought *elixir vitæ*, by which life could be prolonged to an indefinite period, lived a dissipated vagabond, and died prematurely at the age of forty-eight.

Regular and Irregular. — Although Paracelsus introduced a new era in medical practice, and had, like most other noted characters of lofty-sounding pretensions and brazen-faced impudence, abundance of followers, still many of the "old-school" physicians held out against the innovations of his disciples. Thus originated a contest between the Galenists and Chemists, which was

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prolonged through the sixteenth century. The Galenists were the regulars, and the Chemists were the empirics, of that period. The former dealt out prodigiously multitudinous compounds, and the latter made a bold stand with fewer but much more potent agents, while each sect accused the other of killing their patients, I fear with too much truth.

Anatomical. — While the discussions between the contending parties just noticed were gradually extending the influence of the empirical practitioners, and circumscribing that of their adversaries, the science of anatomy began to be more accurately cultivated, which circumstance gave rise to a sect of physicians called the Anatomists. Vesalius, about the middle of the sixteenth century, prosecuted this department of knowledge with unwearied assiduity. He was followed by Eustachius and Fallopius, who acquired great reputation for anatomical skill. The anatomical physicians, however, did not introduce anything original in relation to the theory or the practice of medicine.

Hippocratean Doctrine. — During the seventeenth century the doctrines of Hippocrates again became the prevailing medical philosophy. Anatomy made rapid progress; Harvey discovered the circulation of the blood; Asselli, Rudbeck, and Bartholine traced out the absorbent system; and Malpighi, Hooke, and others explained the structure and functions of the lungs. Boyle disengaged chemistry from the mystery by which it was surrounded, and explained its true province to be, "an investigation into the change of properties which bodies experience in their actions upon each other."

Still the chemical physicians kept up the popularity of their practice by mixing with it not a little of the magical ceremonies and astrological pretensions so rife a few centuries before. Some of them became apparently sincere. Among these were Fludd, who manifested implicit faith in astrology; Kenelm Digby, a man of rank and refined education, who published an account of the mystical virtues of the "sympathetic powder;" and Valentine Greatrix, who cured all diseases by the imposition of the hand.

Fermentationists. — Another sect of physicians now arose, or, rather, a branch of the Chemists, who attempted to blend the crude chemistry of the day, and the cruder physiology, into a compound philosophical system. The leading doctrine adopted by this sect was, that certain fermentations in the blood, and other fluids, were the causes of the different states of health and disease; certain humors were acid; others alkaline; and, as one or the other predominated, a corresponding specific disease was the result.

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Mathematical. — Mathematical science having made considerable progress during the latter part of the sixteenth century, the medical theorizers of the day seized upon its facts to effect another doctrinal revolution; hence arose a sect whose members composed the Mathematical school. Borelli, a profound mathematician, undertook to explain certain functions of the body on mechanical principles; and his pupil, Bellini, maintained that all the actions of the body were under the influence of gravity and impulse, and that all the vital functions could be elucidated by an application of the principles of hydraulics and hydrostatics. The new hypothesis soon ranked among its converts many of the most learned men of the age, and the Mathematical physicians became formidable rivals to the Chemical.

Vitalists. — The next medical sect in order was the Vitalists. It originated with Van Helmont, and finally triumphed over both the Chemical and Mathematical sects. Van Helmont at first belonged to the Chemical school; but to its doctrines he added the idea of a specific agent residing in, or attached to, the system, which controls its own spontaneous actions, and also the actions of remedial agents.

Van Helmont proposed nothing new in the way of curing diseases, contenting himself with mere matters of opinion.

Solidists. — Hoffman wrote voluminously, and the principal theoretical notion which he originated was a modification of the doctrine of vitality. Instead of referring the operations of the animal economy to an animal, he imputed them to a *nervous influence*. This was almost a distinction without a difference, but it served his purpose. The details of his practice were essentially those of the Chemical and Mathematical physicians, possessing no new feature whatever.

In 1671 Glisson published a treatise, in which he advocated the doctrine of muscular irritability, explaining it as a specific property attached to the living fiber, in opposition to the humoral pathology of Hippocrates, which until this time had generally prevailed. Toward the close of the seventeenth century, Bagliva, an eminent medical scholar, systematically opposed the Hippocratic pathology, placing all the causes of disease in an altered condition of the solids. These two writers laid the foundation for the overthrow of the humoral pathology and the introduction of solidism, which has been very generally received by the medical profession to the present time. It is now decidedly on the decline.

Metaphysical. — Soon after the revival of letters, the

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greatest scholars among medical men were incessantly laboring to apply the inductive philosophy introduced by Bacon, and found so successful in advancing other departments of philosophy, to the study of medicine as a science. How signally they failed, let the record of innumerable theories which have come and gone, like the changes of the moon, testify. This failure was not owing to a want of learning, or ambition, or industry, or integrity of purpose. It is attributable purely to the want of the true starting-point.

Boerhaave. — No one ranks higher in the annals of modern medical history than Boerhaave, who was contemporaneous with Stahl and Hoffman. He was a professor at Leyden, and in practical judgment has been justly regarded as superior even to Galen. But in groping among the dark chimeras of his predecessors he was unable to find any thing more enduring than mere conjecture and gratuitous assumption upon which to establish a new system.

Van Swieten, professor in the medical school at Vienna, was a follower of Boerhaave, and the ablest supporter of his views. He wrote extensive commentaries, but they were of little practical value.

Haller. — This distinguished scholar, who has been called the father of modern physiology, was a pupil of Boerhaave. He possessed a mind singularly original and comprehensive, and after long and patient research into the nature of the functional powers of the human body, made a substantial improvement in physiological science. Disregarding all authority, he established the doctrine of the irritability and sensibility of the muscular and nervous systems. His Elements of Physiology "introduced a new era into medical science."

Semi-Animists. — While Haller's doctrines were strengthened and confirmed by numerous experiments instituted by Zimmerman, Caldani, Fontana, Tisset, Zinn, and Verschuir, they were powerfully opposed by Whytt and Porterfield, of Scotland, whose reasonings, however, though able and acrimonious, have been characterized as much more metaphysical than physiological. Whytt succeeded in founding a sect called the Semi-Animists, whose principal distinctive tenet was a vital or sentient principle compounded of the doctrines of Stahl and Haller, evidently intended as a middle theory between the two.

Sauvages, professor at Montpelier in 1734, was one of the main supporters of the Semi-Animist sect. He was the first to arrange diseases into classes, orders, genera, and species, constituting a methodical nosology.

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Cullen — Who was the successor of Whytt in the University of Edinburgh, achieved as brilliant a reputation as Haller, and effected as great a revolution in medical practice as Haller did in physiology. In discriminating the phenomena of disease, Cullen was unrivalled; and he was the first medical innovator for ages whose theory and practice were consistent with and strictly related to each other. His "First Lines of the Practice of Physic" were in fact text-books in our medical schools less than a quarter of a century ago. His works on nosology and materia medica have never been excelled in rigid powers of analysis and accuracy of observation, and his opinions are often quoted as high authority by medical journals of the present day. No one now pretends to acknowledge or defend his theories, though many physicians, perhaps a majority, follow essentially his practice, thus exhibiting another of those glaring absurdities which stamp with inconsistency almost every page of medical history.

Brunonian. — The Cullenian school found a rival in the bold vagaries of what has been called the Brunonian theory, in an early period of its existence. A Dr. Brown, of Edinburgh, who had been a personal and professional friend of Cullen, became, from some cause — probably spleen, jealousy, or disappointment — his bitter antagonist, and a vehement opposer of his doctrines. To effect his purposes of ambition and opposition he advanced a new medical doctrine. He did not trouble himself about authorities, facts, experiences, or reasons, but simply assumed his principles, announced his doctrines, laid down his practice, supported the whole with lofty pretensions, and found many followers among men of learning and science, and in many medical schools, whose professors adopted his doctrines.

The poetical and refined Darwin deserves a passing notice here, as a fruitless theorist and elaborate speculator. His "Zoönomia" is certainly a monument of genius, but destitute of any sound philosophical principles.

Eighteenth Century. — At the conclusion of the eighteenth century, the physicians on the continent of Europe generally pursued the eclectic plan of Boerhaave. Among the French, Lieutaud, who published in 1749 a great work called "Synopsis Universæ Praxeos Medicæ," was the most celebrated. In Germany, De Haen published a work equal to Lieutaud's, called "Ratio Medendi," but he bitterly opposed all the new notions of that period, and warred against Haller's doctrines, and against the practice of inoculation. The most celebrated medical schools in

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Europe were those of Paris, Vienna, and Leyden. The medical schools of Italy also enjoyed a high reputation. Bonet and Mangel there introduced the study of pathological anatomy, which was followed up by Valsalva and Morgagni, who made extensive post-mortem examinations, and recorded the anatomical appearances of the structures. One source of error, however, pervaded all their observations, as it does post-mortem investigations at this day. It is this. Structural appearances after death denote the *effects* of disease; and these morbid changes were and are often mistaken for or confounded with the *causes* of disease.

Present Practice. — Trall writes, "The historian who carefully and without prejudice surveys the present state of the medical profession will observe one of the strangest anomalies which the human mind can contemplate. He will observe a learned profession, adorned with as bright a galaxy of names — scholars, philosophers, and philanthropists — as any profession in any age of the world could ever boast, devoting themselves, with a zeal and industry worthy of all praise, to the study and practice of medicine, yet having no confidence at all in their own system, and stranger still, wondering and complaining that the great masses of the people have no confidence in it!"

Bostock has admitted that "our actual information does not increase, in any degree, in proportion to our experience." The solution of this remarkable problem will be found as we proceed.

Never was any department of human knowledge prosecuted with greater assiduity and energy than have been all the sciences collateral to the practice of physic during the last fifty years. Anatomy, chemistry, and operative surgery have, indeed, made wonderful and substantial progress. Pathology has been greatly advanced. Physiology has been diligently studied, but unfortunately with little success. True, facts in physiology have multiplied exceedingly, and hypotheses into which they have been woven have added greatly to the numerical strength of medical libraries; but as far as demonstrating the laws of life, or increasing our means for the cure of disease, I may safely assert what Bostock admits, viz., "So far as the practice of medicine is concerned, the benefit is rather in anticipation than in existence."

In anatomy, surgery, and materia medica, Great Britain and America have produced many illustrious names. In physiology, analytical chemistry, and anatomy the Germans have taken the lead. In pathology and pharmacy the French have outstripped all other nations. Italy is far behind the other countries named, yet it has produced a few eminent medical scholars.

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But while this tribute is due to the talents and acquirements of the medical philosophers of this age, it must be remembered that all their vast array of learning, and all their multitudinous writings, have done nothing toward placing the healing art on a true philosophical foundation. They have rather tended to render the confusion of ancient dogmas worse confounded by modern speculations.

If a gangrenous limb is to be amputated, a tumor removed, a cancer excised, or a toe disjointed, professors can perform the operation with all the skill and judgment the case admits of. Operative surgery has well nigh reached perfection. If it is desirable to know in what proportion of cases in choleras, typhoid fevers, dysenteries, etc., there was nausea, or vomiting, or headache, or pain in the back, or chills, or rigors, or pain in the limbs, among the premonitory symptoms, or what precise shades of color and consistence the various structures manifested after death, we have in the present state of pathological science nearly all the information we shall ever know what to do with. If we would inquire what particular phenomena of symptoms follow the administration of any given mineral preparation or vegetable drug, the materia medicas of the day, though extremely contradictory with each other, give us all the details that can possibly be of any service. And if we would understand exactly what proportion of ultimate or proximate elements enter into the composition of any solid or fluid, of matter organic or inorganic, animate or inanimate, the present state of chemical science gives us as accurate a knowledge as can be of any advantage, so far as the practice of medicine is concerned.

The reader may now naturally ask, Why has not success in treating diseases kept pace with the extraordinary progress of knowledge in the collateral medical sciences? The answer is ready. A philosophical, and hence successful, practice of the healing art must be based upon the laws of life, the economy of vitality. The only foundation, therefore, of a true medical practice is correct physiological principles; and here is precisely where the whole orthodox medical system of the present day fails — utterly and totally fails. It has no physiological science upon which to practice truly the healing art. In the language of one of the greatest of modern physiologists, Majendie, "there is scarcely a sound physiological principle extant."

When I intimate that there is no physiology in the world, I mean, of course, the medical world. Out of the regular profession this science has been more prospered. Untrammeled by the theories of the schools, individuals, not of the order of medical men, have, as I shall hereafter show, demonstrated the true science of life, and

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laid the true foundation for a medical practice, whose most powerful remedies, so far from being the most potent poisons known on the surface or dug from the bowels of the earth, are the very agencies by which the whole vegetable and animal creations are developed and sustained.

United States.—In no part of the world are medical schools more numerous, medical writers more prolific, and medical periodicals more abundant, than in the United States. And no age of the world presents a medley of medical scribblers in the regular profession more biased and bigoted in their notions, more visionary in their speculations, more puerile in their theories, and more inconsistent in their practices, than is furnished by the history of the present state of the medical profession in this country. This is not because medical men in this country are not as talented as those of any other country, nor because medical men, as a class, are not as intelligent, honest, and philanthropic as men of any other class. It is simply because there is *no medical science in existence.* The practice of the popular system is purely empirical. From establishing new systems and building new theories, the attention of medical men now seems mainly directed to the discovery of new remedies and the concentration of old ones. The critic who will take pains to examine the standard works of the most popular authors on theory and practice — will find, on almost every page, the most contradictory theories supported by equal authority, and the most opposite practices recommended on equal testimony. Well might the celebrated Dr. Rush, after a life-long experience in witnessing the effects of drugs upon the human constitution, declare to his medical brethren, "We have done little more than to multiply diseases and increase their fatality."

The diligent student of medical history can not fail to discover that the ancient and more ignorant practitioners were more successful in curing diseases than are the modern and wiser physicians. The remedial agents of the ancients were comparatively inert and harmless, and, while they inspired their patients with a due degree of confidence and hope, by the charms and ceremonials of magic and mystery, they really relied on judicious hygienic regulations to "aid and assist Nature" in effecting the cure. Modern intelligence repudiates the arts and incantations of a less civilized age; and in their stead has substituted the stronger potencies of modern invention, while the habits of living and thinking, with medical as well as with other men, have become so unnatural and artificial that, in managing diseases, voluntary habits and hygienic agencies are almost wholly overlooked.

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The general plan pursued at the bedside of the patient, by intelligent regular physicians of this country, and, I believe, of all countries, is intended to be eclectic. While they disown all the theories that have ruled the world by turns, they endeavor to preserve and incorporate in their prescriptions all the remedial means which those rejected theories have brought into favor. The only point of skill is to discriminate the exact disease, state, stage, condition, temperament, age, or other circumstance, which renders this, that, or the other, or all together, the most advisable in the experimental prescription. The only acknowledged guide now is experience. But unfortunately the guide points all ways at the same time. There is no common agreement in the testimony of medical men respecting the indications of the most common diseases, nor the properties or operative effects of the most common articles of the materia medica.

To illustrate: Bleeding has been extensively employed in typhus fevers for three hundred years, yet physicians are divided in opinion whether it is good or bad practice. Mercury has been employed more or less for about three hundred years, and extensively during the last fifty years; and some authors consider it a tonic, others a stimulant, others a deobstruent, or alterative, others a sedative, and yet others an antiphlogistic. Brandy has been freely administered in the city of New York and elsewhere in the treatment of the cholera during two epidemics; the result of the experience is, about half of the physicians commend it highly, and the other half condemn it utterly. Within the last fifty years no less than four different methods of treating ordinary fevers have prevailed: the bark and wine practice, the cold affusion practice, the bleeding and saline practice, and the mercurial and opium practice. In about the same period, some scores of specifics for some of the most formidable diseases have been discovered, tried, proved, and then laid aside, to be followed by others, which experienced a similar rise and fall of reputation. Digitalis, the effluvia of cow-stables, and a preparation of nitric acid and opium, have been among the vaunted cures for consumption. Twenty years ago iodine was found to be a specific for scrofula; but no one now thinks of it save as an occasional auxiliary: and a few years ago cod-liver oil was literally flooding the country under the auspices of the allopathic medical journals, and the right wing of the great medical army, the apothecaries, as a remedy for consumption and scrofula; but its brief day is already drawing to a close.

These facts are enough to show the utter fallacy of medical experience, and the unsatisfactory nature of medical testimony, unless

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based upon some intelligible principle to which we can refer the phenomena they present. I can not more appropriately conclude these remarks than by the following extract from Bostock's history: "In modern times, and more remarkably in Great Britain, no one thinks of proposing a new mode of practice without supporting it by the results of practical experience. The disease exists, the remedy is prescribed, and the disease is removed; we have no reason to doubt the veracity or the ability of the narrator; his favorable report induces his contemporaries to pursue the same means of cure; the same favorable result is obtained; and it appears impossible for any fact to be supported by more decisive testimony. Yet in the space of a few short years the boasted remedy has lost its virtue; the disease no longer yields to its power, while its place is supplied by some new remedy, which, like its predecessor, runs through the same career of expectation, success, and disappointment.

Medical books are filled with the names of vast numbers of diseases, as a precisely similar affection of each organ of the body receives a corresponding name. Thus we have Encephalitis, Meningitis, Arachnitis, Parotitis, Otitis, Iritis, Glossitis, Pharyngitis, Laryngitis, Tracheitis, Bronchitis, Pleuritis, Pericarditis, Carditis, Gastritis, Enteritis, Peritonitis, Hæpatitis, Nephritis, Cystitis, etc., etc., and all these hard words ending in ITIS, mean simply an inflammation of the brain, its membranes, the parotid gland, ear, tongue, throat, etc. The laws of one of these affections govern all. Everywhere we have nearly the same phenomena, the same causes, and similar modes of treatment.

I shall not encumber these pages with all the rubbish of medical technology invented by doctors to disguise their ignorance, to conceal it from the people, from each other, and even from themselves; for, with all men, words are too apt to pass for things.

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CHAPTER XXXVI.

THINGS WHICH AGGRAVATE AND PRODUCE DISEASE.

[This from a Pamphlet first published by the Author, in 1850, revised and corrected especially for this work.]

A Disturbed Mind.—An obstructed circulation of vital electricity, and impure conditions of the blood, are breeders of disease; and unless speedily restored to healthy action, will sooner or later carry off the victim. In order, therefore, to enjoy good health and to be free from disease, we must possess a free circulation of vital or nervous electricity, an undisturbed mind, and pure blood.

Nature, if Diseased, but calls to her aid cold water, cheerfulness, and vegetable blood-renewing remedies. These are all that Nature needs to restore to a healthy action, and anything contrary to nature but adds to disease.

Food, if too Rich, Fatty, or Greasy, often causes disease. We should therefore eat only such good wholesome food as each individual may find agrees with him or her best. To say the least, pork is food which many of our most able men discard entirely, it being questionable whether many or all of the scrofulous diseases are not the direct result of too much pork-eating.

The too Free Use of Tea or Coffee is injurious to many, and should never be drank by those who suffer any ill effects or unpleasant sensations after indulging. Nervous people often suffer most from use of these beverages. Those of a bilious and lymphatic temperament suffer no inconvenience from use of tea or coffee, the effects being to relieve and exhilarate.

Beer or Ale, if Pure, is wholesome to those who can use it with moderation, and suffer no ill effects from its use. *Distilled* and *vinous liquors* have done much good, and also created much suffering and misery for mankind. Liquors, like everything else, should never be used except when Nature demands them, and only then in such *moderate* quantities as will *assist* Nature, and *not* kill her. Of the many millions of gallons made and imported to this

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country, it is calculated by those who understand the subject that over one half of the liquor sold is made up for the most part of deadly compounds, of which a single drop, or grain, if given to any individual in its pure state, would produce death instantly. We therefore have great reason to be cautious, and to use no liquors of doubtful parentage; and to be on the safe side, the less used the better the chances are for avoiding being poisoned by adulterations, which if used in immoderate quantities will most assuredly send those who consume it to untimely and unhonored graves.

Milk, as Used in Large Cities, is often adulterated, and contains substances which add to, and produce numerous ills which flesh is heir to. Good pure country milk (using no distillery slops as feed for cows, to force an unnatural yield) is healthy and nutritious food, both for infants, children, and older people, though milk in its purest state is often uncongenial to many.

Impure Water is often the cause of blood and other diseases. If good pure spring water could at all times be obtained it would save a vast deal of suffering, and be the healthiest drink in all cases we could have.

Impurities in the Atmosphere are pregnant causes of nervous and blood derangements. If pains were taken to preserve the purity of the air we breathe, and in obtaining free and unobstructed ventilation for our dwellings, health would be promoted and long life increased.

The Clothing we wear should be so arranged as not to obstruct the electrical radiation which carries off the impurities of the system. Tight clothing, hats, caps, boots, shoes, etc., should all be avoided. *Comfort* and *not* inconvenience is what we want.

Wealth, if it leads to idleness and dissipation, is a source of nervous derangements and blood impurities. We should always use this means, which God has so kindly bestowed upon us, in benefiting ourselves and in doing good to others, hoping only for our reward in the world which awaits us hereafter.

Bad Habits when Young, such as acquired in school by stooping, or laying over stool or desk, prevents the full expansion of the lungs, curves the spine, and prevents the proper distribution of the nervo-electric fluid, thus producing blood and nervous diseases. Parents and teachers should see that children sit in such proper seats and in such proper positions as will allow a healthy action and full expansion of every part of the system, thus avoiding the seeds of many chronic complaints in after life. The too

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free use of candies, especially if colored, is a bad habit for parents to indulge children in, as the most attractive and beautiful candies, by their high coloring, contain the most rank poison, though of course in minute quantities, still they lay the foundation for disease in after years. Young children or persons should not sleep or lie with old men or women, as the older persons invariably take from the younger the vitalizing electricity of their tender organizations, in which case they soon pine, grow pale, languid, and dull, while the older person obtains a corresponding invigoration; therefore, unless you desire the days of the older person lengthened, and that of the younger shortened, *never* permit it. To have healthy men and women, an entire change in the training of children is needed. The principal errors have been alluded to, and many minor ones can not fail to present themselves to the experienced parents.

Bad Practices of Men and Women often cause and produce nervous and blood disorders. The use of tobacco is an evil which "'twere better for mankind had it never been known." This weed, in many cases, produces dyspepsia, headache, tremors, vertigo, epilepsy, etc., to say nothing of its extreme filthiness, and its oils being of the rankest poisons known.

The Injurious Effects of Tight-Lacing in women is often found in their complaints of "*shortness of breath.*" When they compress the chest so tight that free action of the diaphragm is prevented, and that, while full seventy-five in a hundred can expand the upper parts of their chest from two to three inches by actual measurement, the lower parts can not be expanded more than half an inch, very rarely exceeding one inch, while in persons who are not accustomed to this pressure the expansive power between the upper and lower portions of the lungs varies only a quarter to half an inch, — in fashionable ladies from one to three inches, — is it to be wondered at then, that "compressed" ladies should be troubled with "shortness of breath," and that they suffer the many other complaints incident to nervous and blood derangements, superinduced by this practice? Stays, lacing, etc., when necessary, should only be used as a support to the wearer, and never as an instrument of torture, as occurs in the majority of cases.

Another growing Evil, with man and woman, demands attention. The country is overstocked with patent medicines of all descriptions. Almost every drug store has over two thirds of its space allotted to these (in many instances) vile compounds. While a few of the discoverers of these "cure-alls" are

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honest in their intentions, the vast majority are wretches, who would, for a few cents, deal out death indiscriminately, if by so doing they could but enrich themselves. Some of these discoveries originate from unfortunates who have accidentally cured themselves of some complaint which has for years baffled the skill of the old school physician. Their friends at once become aware of the recovery of him who was but recently looked upon as a fit subject for the grave; in turn they try his compound, and are relieved of some real or imaginary complaint, when at once the originator imagines he has discovered the grand "Elixir of Life," and that his medicine will cure every disease that man, and often beast, is heir to. By extensive puffing, and the usual "appliances of the trade," it meets with profitable sale for a while, but soon falls into disuse; for people soon learn that one medicine, no matter how skillfully prepared, can *not* cure all diseases, and that what will help one is an absolute injury to others; and many an invalid is placed beyond a cure, simply by experimenting with these nostrums before consulting an experienced physician. It is evident the plan of the patented medicines is "kill or cure;" they are absolutely dangerous, and the amount of suffering and injury they produce is beyond estimate. Many consult me who have used from one to ten dozen bottles of various compounds. Where their diseases are curable, much that these nostrums produce has to be undone before any relief can be given. If persons would use as much judgment in dosing as in other things of less moment, these nostrums would be deprived of all harm. We know why General Tom Thumb's clothes will not fit a giant; we understand why a lean lady's clothes do not fit a very fat lady; we know why a small hat or shoe does not fit a large head or foot; why colors which are very becoming to some, are to others just the reverse: why is it, then, that we do not so readily understand why the differences in *form, size, habits, and complexion indicate various temperaments, and that these temperaments indicate differences in constitutional peculiarities, and that each temperament and each constitutional peculiarity must have medicine specially prepared for its peculiar complaint,* and that which would cure General Tom Thumb of a disease, would produce no effect whatever on the giant (except to obstruct the system), and that which would cure the giant, would, in all probability, kill General Tom Thumb? Consumers of these nostrums should, therefore, use care in what they take, and avoid *all* medicines unless found necessary. A tombstone bears the following inscription: "I was *well*, would be *better;* took patent medicine, and here I am." How many more tomb-

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stones could truthfully bear this inscription is something which can never be known. In ninety-nine cases out of one hundred where a cure is effected while using these nostrums, I am fully convinced that the cures have been produced by the powers of Nature overcoming the disease, and am further convinced that it has also to overcome the effects of the remedy in many cases. If people and the so-called educated physicians understood better the *laws of temperaments*, and their peculiarities, we should have less suffering, and a more healthy and long-lived race upon this earth.

People should never make practice of turning night into day, but should in all cases retire and arise in proper season, taking only such an amount of sleep as their several different natures or temperaments may require, being with some six, with others eight, and, in rare instances, ten and twelve hours.

Fast Eating is a habit peculiar to Americans. It injures the nervous and vascular systems, produces dyspepsia, and a train of other evils too numerous to mention. We should always take time to eat, and sufficiently masticate the food before swallowing, and never wash down the food with tea, coffee, water, or other liquid, as the thorough lubrication of the food with saliva is necessary to promote good digestion. If we must have liquids at our meals, let them be drank before or after eating, and never with the mouth full, as when the food enters the stomach with other fluid than the saliva, digestion for a time is nearly suspended.

Unhappy Marriages, Licentiousness, AND PROSTITUTION, are also causes of a vast number of diseases which afflict the human race. It is estimated that at least thirty-five thousand males are daily infected with venereal poison in the large towns alone. Most of these persons are residents of the interior, who, returning home, spread the infection of this loathsome disorder; and we meet with the results of this misfortune on every side. "Fancy men" are too knowing to be caught with these diseased females. They know who are sound, and being "men of sport," "gamblers," etc., understand well the different classes of lewd women, and, having this knowledge, make choice of those who are not to be dreaded for the results which would follow if choice was denied them. Still, with all their care, these wise (?) men sometimes suffer terribly.

Loss of Money, Failures, etc., often, through their depressing effects upon the mind, disarrange the harmony of the nervous system. Probably nothing is more productive of nervous derangements than this one cause alone.

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The Use of Adulterated Medicines often produces and aggravates diseases which, in their first stages, Nature alone would, with a little time, overcome. It is a fact well known in New York, that many of our important chemical and medicinal preparations, together with crude drugs, come to us so much adulterated or tampered with as to render them worthless as medicines, and often dangerous to use. Many of the vegetable remedies imported are gathered in the wrong season, or adulterated in such a manner as to elude detection by those not acquainted. I have found so much difficulty in obtaining properly preserved vegetable remedies, that *I have for years had agents under my direct control, who procure for me all which I need, gathered in their proper seasons, well cured, and preserved free from every impurity. I consider that all my success in every character of chronic and seated diseases is owing to having the pure ingredients, knowing what, when, and how to give*, and knowing that when judiciously given, the remedies *could be relied upon to accomplish all which was expected of them;* whereas, was I depending on the roots, herbs, etc., as usually sold by druggists, no reliance could be placed upon them until their value had been determined by actual trial, to ascertain whether gathered in season, cured properly, and had full strength and virtue.

The Botanic Physicians have lost more of their reputation by impurities of their vegetables, or through improper gathering, than can be easily estimated. Had they been their own botanists, and secured their remedies *in proper season*, there would at this day be none but vegetable remedies used by any class of physicians. No physician living, unless he has pure, unadulterated medicines, retaining all their virtues, can expect success. Some botanic friend has informed me that such and such a remedy was worthless, and could not be relied upon. Having taken the same case in hand, using *my own remedies*, I found that my friend was in error, and that which he stood ready to condemn, was a most valuable remedy; but his medicines had lost their virtue by being gathered out of season, whereas mine were pure and fresh, and retained all their good qualities, producing a speedy, permanent, and lasting cure.

When Injury results from the impurities in vegetable remedies, what can be expected from adulterations of mineral medicines, whose adulterates are often more deadly in their effects than the genuine? Is it to be wondered at, then, that patients of the Old School physician make wry faces at the doses given by the family doctor? It is necessary, in giving *all* medicines, that they

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should be *pure*, and that they are just what they are represented to be, or serious mischief may occur. No true physician would allow himself to administer to a fellow-man that which he was not *sure* of the effects it would produce; and *I am free to acknowledge that my chief success in all lingering, chronic, or seated diseases arises from my care in having nearly all my remedies secured especially for my own use.*

Overloading the Mind with too much knowledge, like overloading the stomach with too much food, produces nervous derangements of almost every variety. Excessive labor, and over-exertions of all kinds, inflict a penalty on the person who so sins against Nature. Melancholy also produces the same evils.

If you would avoid all these evils, study well your constitutions; eat, drink, and sleep like sensible people, have a mind and conscience clear, do only unto others as you would wish them to do to you. Be in all things moderate and prudent, and a long and happy existence will be yours.

CHAPTER XXXVII.

TRUE PHYSICIANS.

PATIENTS at a distance frequently inquire, "To what College of Physicians do you belong?" Probably the question could not be better answered than to give "Dunglison's" definition of a TRUE PHYSICIAN, which reads — ("selecting from, to choose,") — "or one who chooses from all others the opinions which appear to be the best founded on facts. Agathinus of Sparta, master of Archigenes of Apamea, in Syria, was the reputed founder, and Archigenes and Aretæus were its greatest ornaments. The doctrine was called *Eclectism, Eclectismus, Medicina Eclectica, Eclectic Medicine.* Every judicious physician must *choose from*, and *select.*" The above is from the best medical authority now in existence, and no physician who clings to *one* doctrine can expect to meet with success, or is he deserving of it. The use of mineral remedies, I contend, in ninety-nine cases out of one hundred, does more injury to the human system than does the disease itself, and I can offer no stronger proof of this than that which can be found in every neighborhood. I refer to the lame and the blind, to the toothless and deformed, to the

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dyspeptic, the hypochondriac, to the individuals of scrofulous habits and ulcerated gums, to the rheumatic invalid and broken down constitution, who are the unhappy victims of mercurial empiricism. It is a lamentable fact, that the most active and potent articles used by the faculty as medicines, and on which they place their principal reliance, are destructive to life and injurious to health, the latter of which they are intended to promote. Their treatment, instead of assisting Nature, only retards her efforts and aggravates disease. Happily for suffering humanity, their practice is so manifestly injurious that it is now on the wane, and must in a few years sink into oblivion. God, in his infinite goodness, has given to suffering man a practice far superior, and shown us that there is yet *Balm* in *Gilead*.

Says the author of the "Key to Medical Science," "We will yet add a few remarks in regard to mineral and vegetable agents in the treatment of disease. We are aware that those who use vegetable remedies are looked upon, by the great portion of the community, with an eye of indifference at least; but often are they singled out as men destitute of the knowledge of anatomy, possessed but of a small share of education, and but little knowledge of the science of medicine. This can only be attributed to a *want* of knowledge, or to a *prejudice, having its origin in the influence which interested individuals* have been enabled to exert over their credulity. The only test must be a trial of their relative qualifications. That point is at issue, and is rapidly approaching its conclusion. How it must terminate, needs no particular foresight to perceive. The thousands and tens of thousands, in all sections of the United States, who have within a few years, and those who are now *daily abandoniny* the use of mineral agents for the treatment of disease, *speak a language which can not be misunderstood*. The ultimate issue is *no longer* involved in doubt; a change, a thorough change, will soon take place in medicine. Physicians will have to start their studies from a new point, practice upon different principles, and adopt very different remedies from what they are now using. A few years from this time, and the mineral and depletive practice will be held in contempt by every well-informed mind. *The people themselves will take this great and important cause in hand: they begin to perceive that the health and well-being of both themselves and families demand it; posterity demands it;* and they will not suffer the important obligation under which they feel themselves placed to pass by unheeded. Already they have established societies among themselves for the furtherance and *support* of the *Botanical* cause, and for the *suppres-*

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sion of the *mineral* practice. We bid them good speed, and shall not hesitate to throw all the force and energy of which we have control into the scale. It is a good work — a worthy undertaking, and one calculated to immortalize its projectors."

The trees, plants, flowers, shrubs, roots, and herbs I claim to possess *all* the *virtues* of the mineral kingdom, *without* their deadly and life-destroying effects. If proof is wanted of the injurious effects of minerals, mercury, etc., we have but to refer to those physicians who have employed it most extensively in their own practice; there is no getting round these admissions, and if one half was admitted as against any other remedy in the *materia medica* it would be universally avoided, and made a penal offence to have sold it without labeling "DEADLY POISON."

"Minerals exert a pernicious and baneful influence on the system; they seldom or never cure, and often destroy the patient. Their effects depending entirely on the state of the stomach whether they act at all, or prove injurious." — *Prof. Hue.*

"Among the numerous poisons which have been used for the cure of disease, there are few which possess more active and more dangerous powers than mercury." — *Hamilton.*

"Mercury, antimony, etc., are now almost the only means used for the cure of disease, notwithstanding their deleterious effects are fatal to multitudes." — *Arnesley.*

"I was a dogmatic at twenty, an observer at thirty, an empiric at forty, and now, at fifty, I no longer have any system." — *S. Bordea.*

"The art of medicine is founded on experience." — *Edinburgh Medical and Surgical Journal.*

"How egregiously do the greatest men err whenever they lose sight of facts, or substitute sallies of wit or specious arguments in physic for observation and experience!" — *Buchan.*

"If an opinion be *erroneous*, it requires discussion, that its errors may be exposed. If it be *true*, it will gain adherents in proportion as it is examined." — *Dr. Cooper.*

"Let truth and falsehood grapple. Who ever knew truth put to the worse in a free and open encounter?" — *Milton.*

"Abominable is the murdering quack, who, for ever impatient to unsheath his blood-thirsty lancet, draws from a fever patient the irreparable balsam of life." — *Dr. Hunn.*

"I am neither for the ancients nor for the moderns, but shall be of every age and nation." — *Baglivi.*

"We have not in any instance yielded our assent to authority, however high, when it has been contradicted by our own experience." — *Dewees.*

"It is owing to our ignorance that there is any necessity for mercury to cure disease." — *Abernethy.*

"If the Reformed System be a good one, let it flourish and progress. If it be a bad one, let it be frowned down by the just censure of an enlightened community." — *Banner.*

"Both surgery and medicine can and will, in the present astonishing strides of human intellect, be forced to pass a rigid scrutiny, and undergo a radical improvement." — *Smead.*

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"The popular belief that every country produces simples suitable to cure all the prevailing local diseases, is not void of truth; vegetable substances afford the mildest, most efficient, and most congenial remedies to the human frame. The numerous cures that are daily performed by the use of vegetable medicines are sufficient evidence of their super-excellent virtues." — *Prof. Rafinesque.*

"The Flora of North America is astonishingly rich in remedies. There is no doubt in my mind that, in more diseases than is generally acknowledged, vegetable simples are the preferable remedies. Who knows but in time these native productions of the field and forest will so enlarge and confirm their dominion as to supersede the employment of other medicines?" — *Prof. Waterhouse.*

"To yield to any authority would here be criminal. Facts must and will stand." — *Dr. Underwood.*

"It would be highly advantageous to the public, and likewise to the best part of the medical profession, if the predispositions and occasions of disease were made a portion of the education of every gentleman." — *Dr. Armstrong.*

"Every physician must rest on his own judgment, which appeals for its rectitude to nature and experience alone." — *Gregory.*

"An obstinate adherence to an unsuccessful method of treating a disease is self-conceit; it generally proceeds from ignorance; it is a species of pride to which the lives of thousands have been sacrificed." — *Ibid.*

"I am here insensibly led to make an apology for the instability of the theories and practice of physic. And those physicians generally become the most eminent who have the soonest emancipated themselves from the tyranny of the schools of physic." — *Author.*

"Our want of success is occasioned by the following causes: first, our ignorance of the disease; second, our ignorance of a suitable remedy; third, want of efficacy in the remedy." — *Ibid.*

"If truth does anywhere manifest itself, seek not to smother it with glossing delusion; acknowledge the greatness thereof, and esteem it thy best victory when the same doth prevail over thee." — *Hooker.*

"The whole nation is groaning under the present practice of the medical profession, which fosters disease more than cures it, and debases or ruins our constitutions." — *Morison.*

"Physicians have been tinkering the constitution for about two thousand years to cure diseases; and the result of all their discoveries is, that brimstone and mercury are the only two specifics. Diseases remain what they ever were." — *Lacon.*

"All men ought to be acquainted with the medical art. I believe that knowledge of medicine is the sister and companion of wisdom." — *Hippocrates.*

"In early times skill in healing was esteemed a part of wisdom. I believe the practice of medicine should be agreeable to reason." — *Celsus.*

"As health is the most precious of all things, and is the foundation of all happiness, the science of protecting life and health is the noblest of all, and most worthy the attention of all mankind." — *Hoffman.*

"Not only a reformation in medicine is necessary, but a revolution."

"O, that men would stoop to learn, or at least cease to destroy." — *Stokes's Practice.*

"Dr. McNair, of Philadelphia, makes the following candid confession: 'I have employed,' says he, 'the treatment recommended in the books, and used indiscriminately by medical men during the last forty years, and found

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them altogether useless, not only in my hands, but also in the hands of others, some of whom stand at the head of the science.'" — *Medical Suggestions*, p. 168.

"The whole *art of healing* may be comprised in three adverbs or words, viz.: WHAT? HOW? and WHEN? In other language, *what* agent to prescribe? *how* and *when* to administer it?"

The reader must bear in mind that the quotations above are opinions of physicians of note, who, like myself, have received their educations from the old school of medical colleges, and who now, after years of experience, denounce the use of mercury and all destroying minerals. It is but a short time since that the Surgeon-General for all the armies of the United States PROHIBITED, under *any* and *all* circumstances, the use of mercury or calomel by any assistant-surgeon in the employ of the Government. To such an alarming extent had our soldiers suffered from its use, that even the Surgeon-General, himself an Old School, was obliged to denounce his once best and only remedy. What, then, can people expect a reformed and independent physician to say in its favor?

In regard to therapeutic electricity as an agent for cure of chronic complaints in many diseases of the most serious nature, this has proved a blessing; but its reputation has suffered by being in the hands of bungling operators, and, again, by even good physicians, who rely on it exclusively as a "*one cure-all;*" the consequence of which is, many intelligent people look upon this class as a set of men somewhat "shoddy," to say the least of them. A celebrated physician, who has had years of experience, and is known as a gentleman of vast ability, thus speaks of electricity as a remedial agent: "It should not be relied upon to the exclusion of other remedies, nor should a cure be expected instantly from its use; it is folly to think of making the lame walk, and blind see, by use of a single application in any shape." In cases in which it is *proper* to use it, immediate benefit is derived; still, to perform a permanent cure, it must be in the hands of a skillful operator, and *properly* applied one or more times. People often cure themselves by personal application of the battery, but have the advice beforehand of a skillful and competent instructor. I use this agent a great deal in many forms, and with the utmost benefit to those whose complaints require it. In disorders connected with the nervous system, when understandingly applied, it is a most wonderful restorer, and have myself been often surprised at its astonishing curing virtues in a class of complaints heretofore considered beyond the reach of man to relieve.

I often find it necessary to send my patients, at a distance, remedies subjected to an electrical medication, and the success these

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remedies meet with is proof conclusive that electricity is an indispensable remedy, but like all other good things must be applied in season, and used properly by one who understands it; otherwise it is useless, and often a dangerous remedy.

Again, there is a class of persons who use water as a universal remedy for all complaints. While the success of Hydropaths is great in some diseases, it is well known they insist from the start upon a rigid adherence to Hygiene, — good wholesome diet, fresh air, exercise, mental relaxation, etc., which alone, in many cases, will cure the patient; and their rules being more strictly enforced than by any other school, most physicians being inattentive upon this important subject, the Hydropaths gain most excellent advantages. "Water," "Inhalation," "Swedish Movements," Turkish Baths," etc., while they are all excellent remedies in their place, and are often advised by me in diseases requiring their use, still they, like electricity, should never be used to the *exclusion* of other good and well-known remedies, otherwise much harm, and sometimes even death may be the result.

No prosperous physician will ride "one idea," for it is out of keeping with universal success; different people have different temperaments and different constitutions, therefore requiring different remedies; and no one medicine or remedy is a universal "cure-all." Such a remedy is impossible, and no one sect or doctrine exclusive to that which may be good in others, can successfully combat with diseased and afflicted humanity.

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CHAPTER XXXVIII.

A TALK WITH THE AFFLICTED.

In this portion of our work we propose to speak of that class of complaints to which the author has for many years devoted his entire attention, namely: —

1. All Kinds of Female Complaints. — Sufferings incident at the dawn of womanhood, the age of maternity, and the change of life. Irregularities; painful menstruation (dysmenorrhea); scanty menstruation (amenorrhea); excessive menstruation (menorrhagia); whites (leucorrhea). Womb complaints: falling of the womb (prolapsus uteri and procidentia uteri); ulceration of the womb; inversion of the womb; anteversion of the womb; retroversion of the womb; thickening of the coats of the womb; polypus of the womb; cancer of the womb; inflammation of the utero-vaginal membrane; bearing down; ovarian tumors; cancer of breast; irritation; green sickness (chlorosis); anemia; caked breast; milk sickness; weakness; prostration; want of power; piles (hemorrhoids); eruptions; nervousness; pains in back, side, or chest.

2. Diseases Usually Beyond the Reach of Medicine. — Palpitation of the heart; headaches of all kinds; inability to collect the thoughts; confusion of the mind; weakness in limbs; indisposition to exertion; loss of memory; dimness of vision; lassitude; loss of power; difficult breathing; coldness of extremities; trembling; flushes of heat; wakefulness; feverishness; pain in the back; diabetes; premature decay.

3. Deafness; noises in the head; blindness; ophthalmia; weak or inflamed eyes; granulated lids; spots or objects before the eye. Rheumatism (chronic or acute); gout; neuralgia; dyspepsia; catarrh; asthma; bronchitis; rush of blood to the head; stiff neck; swelled tonsils; ruptures; kidney complaints; lung diseases; liver complaints; hip and spine diseases; biliousness; dropsy; paralysis; palsy; epilepsy; insanity; consumption; debility; fevers; agues.

4. Obstinate Eruptive Diseases. — Pimples; ulcers; cancers;

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salt rheum; scrofula; erysipelas; ring-worm; felons; boils; burns; piles; St. Anthony's fire; scald head; discoloration of the skin; barber's itch; phagedena; copper-colored blotches; black specks or worms in the skin; redness of the skin; sallowness; fever sores; canker; scabies.

5. STRANGE, NAMELESS, AND VIRULENT DISEASES. — Lockjaw (tetanus); malignant pustule; deadly bites of animals or insects; diphtheria; rose cancer, spider cancer, wolf cancer, schirrous cancer, fungous cancer; hypochondriasis; elephantiasis; leprosy; white swellings; blue face; goiter; glandular swellings; deformed limbs straightened; osseous joints relaxed; stuttering remedied; limbs saved from amputation; minerals and mercury drawn from the system.

And in addition to the above, all diseases mentioned in this work, which have assumed a chronic or lingering form, the symptoms and character of which may be found under appropriate headings in the preceding chapters. The reader will please understand that in mild or acute diseases, or in cases of surgery, I have no time to give, and do not wish to interfere in such cases that may require the use of simple remedies named in this book, or the immediate attention of the home physician. I simply request that those needing such assistance, and that those giving it, will not take or use any poisonous mineral, or other substance, which can but make the cure so effected worse than the original disease.

Chronic complaints, and those of a lingering nature, are curable in their first, incipient, and advanced stages; and those even who have diseases which in many, many instances, are pronounced incurable, if placed in the hands of a skillful and thorough physician, who brings to his assistance vegetable, hydropathic, electrical, and mechanical remedies, knowing *what*, *when*, and *how* to *give* and *apply*, may certainly rely on immediate relief, and with care and attention on their part, expect in time lasting benefits, and in most cases permanent cures. While I am well aware there is a time when we must all die, I am fully convinced that very many are dying hourly with old lingering and chronic complaints, whose health could be restored, and they be spared to themselves and friends for years, if the services of some skillful and intelligent physician could be had who makes a speciality of chronic diseases in all their complicated and various forms, and who calls to his aid such proper agents as have before been mentioned.

There is a class of persons who suffer from year to year with real or imaginary complaints, who are contented with receiving such

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treatment from their home physicians as may render them "comfortable" for the time being; and be their complaints incipient or advanced, the same "comfort" is usually about all that the patient ever receives, for by adopting such treatment as would remove the cause and effects, the visits, and of course the bills, would be reduced to a very few. All should bear in mind that, unless the CAUSE and EFFECT be first removed, no lasting relief can be given, and that this system of "relieving" for the time being is like an unskillful farmer who would in his garden trim off the leaves and branches of weeds which he desired to destroy, in place of taking them up bodily, roots and all, from the soil which they impoverish.

Chronic complaints have deep-seated causes, the pains and inconveniences which we suffer from them being simply the effects of these various causes, and in order to get free from disease, all these causes and sub-causes must be removed by appropriate remedies and skillful treatment. Having these facts in view we would say, when temporarily confined to your beds employ those nearest you in whom you have the most confidence, but when up again and disease still holds on to you for weeks, months, and years, then call to your aid one who has devoted his entire time and attention to chronic and lingering complaints, and who, by an experience of years, can give a thorough and practical course of treatment, which not only trims the leaves and branches, *but removes from the system the very root of all your ailments*, making the man permanently whole and well again, and with no further desire to receive simply "comfort."

"Very few," says Buchan, "of the valuable discoveries in medicines have been made by physicians; they have, in general, either been the effect of chance or necessity, and have usually been opposed by the Faculty till every one else was convinced of their importance. An implicit faith in the opinion of teachers, and attachment to systems and established forms, and the dread of reflections, will always operate upon those who follow medicine as a trade. Few improvements are to be expected from a man who might ruin his character and family by even the smallest deviation from an established rule."

A system of medicinal science which has been formed conscientiously, clear of all these impediments, and which is confirmed in its salutary effects by the experience of a lifetime of practice, is here offered to the public.

Many years since, being convinced that there existed in the several doctrines heretofore advised sure and certain specifics for the

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cure of all curable diseases, after many years of industry and much travel we have been enabled, through God's goodness, to penetrate more deeply into the wonderful and obscure mysteries of these several doctrines than any other physician of this generation, and do honestly believe and know that by the use of extracts, vapors, fumes, and other proper remedies, that all curable diseases can be positively, speedily, and permanently cured, and, as we live, will never sanction the use of anything that could by any possibility do injury to a fellow-creature. These remedies build up, cure, and restore the suffering patient, without resort to violence. They do not sap or undermine the vital forces, and do not draw upon the nervous system, as is the case with the remedies used by the Faculty. These organs and their tone are restored from the start. But one thing should be stated, namely: Knowing that a great many of the popular diseases originate in early indiscretions, abuse, etc., if in our judgment we consider it best that this fact be kept in view, it is done; and the vast success constantly met with on every hand, and in those cases particularly which have been under the care of from one to twenty physicians, and have despaired of all hope, so universal again, must we say, has success been met with, that even the most hopeless can truly renew their hope.

Should any of my readers desire to avail themselves of this practicable system of medicine, and can find no one else to apply to in order to receive the experience which the author has necessarily had in all complicated, lingering, and chronic complaints, the author stands ready to undertake the most difficult and hopeless cases, either by personal application at his office or through letters by mail, and in all cases which he may conclude are curable, has the utmost confidence of success. In cases which may be considered as beyond the reach of the author's treatment and medicines, the best counsel and advice will be given free of charge, that the life of the person so applying may be extended to the longest period of human existence.

To those who may desire to consult me by letter, I here suggest a few leading questions, and in replying, it is only necessary to write the *number* of the question, and "*yes*" to it, adding such other remarks as may have a bearing on the case. The questions which do not apply to your particular case need not be noticed; this will save all unnecessary writing. After receiving a reply, if I desire more information, I will apply for it.

Questions to be Answered.—1. Give in all cases the number of inches around the chest, measuring directly under the arms. Your age, height, weight, color of hair and eyes,

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and complexion. 2. Have you indulged in onanism, masturbation, or self-abuse? if so, will you, or have you abandoned the habit? 3. Do you have involuntary night emissions? 4. Do you have discharge of mucus during a movement of the bowels? 5. Or after passing urine? 6. Do you have frequent desires? 7. Are the emissions, if any, attended by desire? 8. Have you too frequent desire to urinate? if so, how often? 9. Is the urine excessive in quantity? 10. Is the urine very scanty, and discharged with difficulty? 11. Is the urine high or dark-colored and offensive; or is there any sediment after standing; or any pain during voiding it? Give full particulars after examination night and morning. 12. Is the urine cloudy, or white and milky? 13. Is there much pain in the small of the back? 14. Is there pain in the region of the kidneys? 15. Are the veins swollen in any part? 16. If so, describe the part. 17. Have you ever had any private disease? if so, what? 18. Have you any discharge like gleet? 19. Is there any burning in the channel after urinating? 20. Have you any stricture, or obstruction in the passage? 21. Have you ever had venereal disease? 22. Have you taken much balsam copaiva or cubebs? 23. Have you taken much niter, or spirits of turpentine? 24. Have you taken much mercury, calomel, or quinine? 25. Have you committed sexual excesses? 26. Are you subject to costiveness, so as to require purgative medicines? 27. Are you subject to diarrhea? 28. Are you afflicted with worms at the anus? 29. Are you troubled with piles? if so, of what kind? 30. Are you so weak or debilitated as to be unfit for business, or the duties of life? 31. Are you very thin in flesh? 32. Or are you full-blooded and robust? 33. Are you very wakeful at night? 34. Is your head much affected by nervous emotions, headache, dizziness, etc.? 35. Is the memory much impaired? 36. Does your heart palpitate violently at times? 37. Is the stomach weak and digestion bad? 38. Are the discharges — during sexual intercourse — too quick? 39. Is there a want of sexual desire, or is the desire strong? 40. Are you subject to liver complaint or bilious disorder? 41. Have you used ardent spirits freely, or tobacco? 42. Have you ever had chills and fever? 43. Have you had any bad eruptions on the skin near the genital organs? 44. Have you any scrofulous sores, or had any? 45. Or your parents? 46. Are you married? if so, at what age did you marry? 47. Are you very nervous? 48. Do you have fits of melancholy? 49. Are your habits sedentary or active? 50. Is your voice weak or strong? 51. Do you take much exercise? 52. What is your occupation? 53. How many hours do you lie in bed?

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54. Are you accustomed to bathe? how often? 55. How long have you been suffering? 56. If any other difficulty, mention it. 57. Are your parents living? if not, what disease did they die of? 58. Have you had any hereditary disease, such as scrofula or consumption? 59. Have you had any tumors or swelling behind the ear, under the arm, or knee, or in the groin? 60. Have you ever had sore eyes? 61. Any pains in or discharges from the ears? 62. Have you any external sores, and is your flesh bad to heal after a cut or scratch? 63. Is your tongue furred and mouth slimy? 64. Is your tongue very red on the tip and edge, with small spots or pimples towards the end, or is it white or dark? 65. Have you any sore throat, or tickling in the throat sufficient to provoke coughing? 66. Do you cough frequently, and raise much phlegm? 67. When is your cough the worst? 68. Do you have night sweats, with occasional or frequent attacks of fever and chills? 69. Do your feet and ankles swell up? 70. If you raise much, what color is it, and how much in quantity during the day? is it mixed with blood, or small pieces tinged with blood? will it sink or swim in water? is it sweet or salt to the taste, or is it without taste? 71. How is your breathing — easy or difficult? 72. Have you any sudden spasms? 73. How many times does your pulse beat in a minute? Try it two or three times in the day, and send the average; or, if much discrepancy, give each separate count. 74. Is your appetite good? 75. Have you any sour rising from the stomach, or any pain, or empty, unsatisfied feeling in it? 76. Have you sick stomach or sick headache, and frequent desire to vomit? 77. Have you any pain over the region of the lungs, or in the side or back? Give particulars. 78. If female, how many children have you had? 79. Have you any vaginal discharge, such as the whites? 80. Have you falling of the womb? 81. Have you any rupture? 82. Are your courses regular or irregular, too profuse or scanty? 83. Are your children healthy? 84. Do you have fits of any kind? 85. Are your feet and limbs usually cold or hot? 86. What is your manner of living — the food and drink you usually take? 87. Do you use tea, coffee, beer, or liquors of any kind as a beverage? 88. Do you use morphia or opium? 89. Do you have unpleasant dreams, talk or mutter during sleep? 90. Give opinion as to the cause of your troubles; how long standing, number of different treatments received, and any and all other particulars you deem of importance.

Bear in mind that you need not reply to any of the questions except those which apply directly to your symptoms. Many of these inquiries may seem frivolous, but they all have a bearing

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on the case, and will enable me to determine as correctly the exact nature and extent of the disease as if a personal observation had been made.

I am in constant communication with patients in every part of the United States, the various Provinces, and some parts of Europe, and the gratifying reports made, and the universal success met with, if published, would fill several such volumes as this, and doubtless prove of great advantage to me. However, I will here state, I never make public any communication, or parts of such, except by special consent or request, and even but rarely then, as my reputation has long since been established, and I am so well known that evidences of this character are not needed. However, for the benefit of those who may not be acquainted with the success of the system of practice which I follow, I have collected at random, from the many letters sent me unsolicited, many extraordinary cures made by this system, and published the same in a neat and convenient form, which will be sent gratis to all who will send their address, or the address of their friends.

Persons at a distance, who wish to place themselves in my charge, need not feel backward on account of inability to visit me, for, as before said, I am constantly treating those whom I have never seen, in all parts of the country, sending medicines, counsel and advice, by mail, express, steamers, railroad, etc. I but require the answers to questions before asked, when prompt and honorable attention will be given, and wherever there is a post-office, be it ever so small, medicines will reach as safely as to one of the larger towns.

Chronic complaints require time to effect a cure — *nothing is gained* by what is termed "quick treatment." I well know the impatience of the invalid, and his desire to be cured as speedily as possible; but it is not possible to cure, and *permanently remove* the *cause* and *effects*, in one or two weeks, of a disease which has been from one to twenty years accumulating. The remedies used act surely, but no faster than the necessities of the case will admit of. A gradual change in the system must take place, and all the functions act harmoniously, both in the mental and physical organization. In this way we are gaining *permanent cures*, and are removing *every cause* and vestige of the disease, giving the patient *immediate* relief from commencement of the treatment. The patient loses no time, nor suffers interruptions or inconveniences while under treatment, and the diet is only such good and wholesome food as patients themselves may find agrees with them best, thus interfering in no manner with the accustomed natural life of the patient. One thing

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patients should always bear in mind — they have as much assistance to lend in effecting a cure in their cases as the physician himself. Remedies must be used regularly, and general instructions complied with, to insure success. The physician may be ever so accomplished and experienced, the medicines the best adapted to the case, the counsel and advice the most wise and beneficial, in fact, on the part of the physician, everything may be perfection itself, but unless the patient lends his or her assistance, in good faith, all may prove a failure. Of one thing those seeking my services may rely upon, and that is, that I shall not risk my good name and reputation, secured by close study and long confinement to business, by giving encouragement to those who may have complaints where the chances for a cure are at all in doubt. I give, in these cases of doubt, counsel and advice free. And now, inasmuch as the cure depends so much on the patient, I but in justice urge upon all employing me to observe particularly all counsel and advice, take medicines regularly, and I will guarantee to each one I will *permanently* cure a larger percentage of *chronic* cases, after they have been given up by the "Faculty," than this same "Faculty" do in treating cases *first* presented to them, which are neither seated or difficult of cure. My highest ambition is reached in snatching, as it were, from the grave, old, desponding cases, which have been under the treatment of from one to twenty physicians of the ordinary practice before applying to me for assistance, and my continued success in these desponding cases is clearly shown by the numerous letters from all parts of the country which are being constantly sent me.

In conclusion, I wish only that class to consult me who have become hopeless of receiving relief, and who have failed to receive benefit from any other quarter. In these cases I find an enemy pleasing to combat, and with the assistance of the patient, and "He who rules all," *can* and *do* conquer. Persons addressing me must have no hesitancy in writing freely on every subject which has a bearing on their several complaints. *All*, with me, is *strictly confidential*, and under no circumstances, whether the subject be important, or of no importance whatever, will any but myself know of the communication made. All letters relating to that which concerns others are destroyed as soon as replied to, and their contents seldom or never thought of again. My bosom forever covers the secrets of my patients, and I value my hard-earned reputation too highly to lose it by displaying such unmanliness and contemptible meanness as would be the case in such a breach of confidence. *In all and every letter that is written to me, give your full name, your*

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post-office, your county, and your State; then no delays in receiving prompt returns occur — *and no matter how often you write, never neglect this,* as I at once destroy all letters not giving address, my time being too valuable to waste in searching records for the proper names of the vast number who are constantly writing to me.

My charges are always as reasonable as the circumstances of the case and patient will admit of; and to those who are poor and needy, I make simply the charge for medicines which they may use, asking and expecting nothing for my services until the person so treated may be able to pay for such services. My object is to assist and benefit my fellow-man, and all addressing me may rely on prompt, faithful, and honorable attention. *Remember, no letters are replied to which do not give full address,* and letters which do not contain the return postage are destroyed without reading. I pay postage on all packages, medicines, etc., sent by mail, and only require the letter postage of a single rate to be enclosed for a reply. Papers and circulars free to all who apply, or sent addressed to any friends. The full address of the author may be found on the *title* and last page of this work.

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PART IV.

CHAPTER XXXIX.

LOVE, MARRIAGE, AND HAPPINESS.

PARAGRAPHS for the instruction and welfare of the Nation concerning Male and Female, both young and old. Read, consider, and profit. The several lessons are arranged as below.

"Love." "*Perfect* Love." "Love embraces many Qualities and Conditions." "A Mistaken Idea." "Confidence." "Another Means of securing and retaining Perfect Love." "A Companion should be regarded as an Equal." "Many Persons who marry the second, third, or fourth Time, manifest *different* Characteristics each Time." "If the Evils of an unhappy Marriage can be avoided, they ought to be, by all Means." "To know ourselves and others Correctly." "The Fault of Young People." "Lovers devotedly attached, have no Occasion to use Artificial Means." "The Object in visiting before Marriage." "Too long or too short Courtships — an Illustration." "Many Matches." "Many value their Friends for the Presents they bestow." "If a Man strives to please and make happy his intended." "Such intimate Relationship as Marriage." "The Majority of Evils." "Marriage is often made a matter of Feeling, with not enough Judgment." "Happiness in Domestic Life." "The Desire of Wealth." "In Cases where no Deception is used." "Many think that Matches are made in Heaven." "Some have alone the Motive of Conquest." "While complying with the Tendencies of our Nature." "Duties of Parents and Teachers." "Important to the Unmarried." "Do not be so accommodating." "Do not marry then." "Do not marry because —" "Do not marry with the Determination —" "Do not be so Modest —" "Playing the Dumb Belle." "Do not marry a Coquette or Flatterer." "Do not trifle with your Affections." "Do not be so Precise and Regular." "When you are Married." "Do not excite Love by Stimulants." "If you are very Poor." "If you have Insane or Consumptive Tendencies." "Do not be so

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long in Courting." "The Organization of Children." "If you are very Rich." "Be sure you have the Confidence and Sanction of the Parents." "Finally." "Matrimonial Chances." "One Remark." "The Influence of Marriage on Health, Long Life, and Human Happiness." "Fowler's Celebrated Appeal to Man."

Love is applied so universally, that it means almost anything that we may wish. It has every variety of signification, every shade of meaning which any one has a mind to attach. The term Love, as generally used, is applied to all pleasurable emotions, whether physical or mental.

Perfect Love, as applied to a true union of two in marriage, is something more than the above. It comprises more than all united loves. It is something that can not be bought or sold, weighed or measured, seen or handled, lent or borrowed — use only brightens and strengthens it; age gives it intensity and power of action; it never wearies nor faints; it never forsakes nor forgets; it never slights nor trifles; it never wears a false smile, nor assumes false colors. It is always warm, alive to sympathy, smiling, pliable, gentle, humane, disinterested, and devoted. It is constant, uniform, and unchangeable; all admire and desire it, yet few possess it. It can be had without money or labor; and yet thousands would sacrifice their fortunes to obtain it. Without it, mankind are miserable; with it, perfectly happy; without it, society is unstrung; with it, society is united; without it, there are no pure family enjoyments; with it, the family circle is a paradise on earth. With it, man is contented; without it, he is like a feather on the wind. Those who are fully imbued with it, are honest, virtuous, industrious, moral, refined, and elevated in feeling and conduct, and are happy and contented. Those who do not possess it, are discontented, unhappy, irregular in their habits and feelings, and more or less inclined to wander and yield to immoral practices.

Married persons who love each other, always live together agreeably. Those who do not, are at variance; frequently have disputations, abuse each other beyond endurance, and separate as enemies.

Love embraces many Qualities AND CONDITIONS. — It is on a graduating scale. It commences with the physical; and, when perfected, ends with the spiritual. With many, love goes no higher than the physical qualities; but, with a few, the physical has less charms than the mental. Spiritual love is enjoyed where one MIND is united to another in a union of sentiment and affection which no external defects can dissolve. Physical love arises from the appreciation of physical qualities, and

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the enjoyment of a physical union. Perfect love is a union of these two (physical and mental), with spiritual love in the ascendency, overruling and bringing into harmonious subjection all the propensities of our nature to the moral and intellectual faculties; or, in other words, it is the result of the union of two congenial spirits, in which all the faculties of the mind are gratified according to their legitimate natural functions and strength,

It is a Mistaken Idea, that, because we have loved once, and been disappointed in that love, or the object of it removed from us, our souls, that were made for love, should remain desolate for ever, and, like Noah's dove, be without an object upon which to fix our affections. Perfect love, as manifested in the perfect union of the male and female mind, in the proper and natural display of the social and domestic feelings and duties, can not exist except by the union of the physical and mental faculties. We may regard friends, independently of the sex, with purely spiritual feelings; but persons possessed with this feeling alone are not qualified for married life and parental duties; and they should not place themselves in those relations unless they can unite with individuals of the same cast of mind. I have yet to be convinced that a union can not exist in as harmonious and perfect a degree in the second or third marriage as in the first, and frequently more so. My observations are the reverse of the above doctrine.

I grant that the love one companion bears to another is very different from the friendship existing among friends, even of the opposite sex; yet, when that companion is taken away by death, I do not see why the affections may not find a resting-place upon another of equal or even superior attractions, and the same feelings and functions of *our* nature. It is no doubt true, that in order that a perfect union may take place, there must be a natural and honest exhibition of the real native elements of mind, adapting each to the other in all the particulars requisite for perfect love. When this is done, they become united in their mental and physical qualities and desires, which are similar in each other, upon the strongest principles of connubial felicity. Too much candor and honesty in forming such a union, therefore, cannot be used toward each other. Such love is secured and perpetuated first by having perfect confidence in each other; for, with that firmly established, imperfections may exist, and the charm of wedlock not be broken.

Confidence is a sustaining element of all unions and alliances. The moment one of the parties begins to lose confidence, that moment is the beginning of sorrow and misgivings. The seeds

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of dissension are sown, and if allowed to be matured, and brought to a crisis, trouble is the consequence. Two persons who have not perfect confidence in each other, ought not to marry, no matter how favorable other circumstances are; for, with all other things agreeable, if there be a want of confidence, the most essential ingredient is wanting. If no other excuse could be rendered by a young lady for refusing her hand in marriage, that of not having confidence in the gentleman who makes the offer, would, and ought to be, a sufficient one. Sometimes we find an engaged couple have what is called a "love spat," and afterward make up and marry. Such marriages can not be the result of a perfect union; for, with a limited acquaintance they failed in confidence, but in order to marry, have put an ointment over the wound, and healed it just long enough to be pronounced husband and wife, only to break when there is no remedy or deliverance. Such marriages may be legal, but not valid according to the order of nature. The law may bind two individuals to live together as husband and wife; but it does not produce that spiritual union, that concord of feeling, which makes it a pleasure to bear each other's sorrows and woes, and go hand joined in hand, and heart joined to heart, through the journey of life. Although I would not say that there should be no legality, no public sanction, no outward form and ceremony in marriage, yet I do mean to say, that the legal tie forms, in many cases, scarcely any barrier to the floodgates of licentiousness and infidelity, and is no sure guarantee for constancy, purity, and faithfulness on the part of those who are held in bondage by it. Let us have the legal tie, but let us also have the marriage of the soul, the union of the affections.

Another Means of Securing AND RETAINING PERFECT LOVE, arises from a proper adaptation of one to the other; not that each should possess every element and mental quality of the other, for the one may have a mental deficiency that is to be supplied by the other. The two positive or negative parts of the battery are not brought together in order to produce the desired effect; but the charges must be different; one must be positively, and the other negatively, charged with electricity. Two clouds may float together for days and weeks in the blue expanse above us, if they have an equal amount of electricity; but let one be positively filled with the gaseous fluid, and the other negatively, and we see the result. They assimilate or unite one with the other in action, and bring about some result. So in married life, the character of each may be modified by some quality or influence in the other. Where the general desires, feelings, pursuits, tastes, and enjoy-

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ments do not clash, there may be sympathy for each other, and an instinctive desire to conform and adapt themselves to the peculiarities of each in the various relations in which they may be placed: in other words, to be "help meets" with a common bond of sympathy, although there are still many discrepancies in other things. If the husband be harsh, coarse, and vulgar, and fails to adapt himself to his wife, who may be refined, delicate, and sensitive, or vice versa, there is a *natural* difference which can not be easily overcome, though the one may be disposed to accede to the other's wishes; hence the necessity of there being a *similarity* of organization, that will not allow of *opposite* desires, habits, and tendencies of mind.

A Companion should be regarded as AN EQUAL: both are entitled to the same respect, privileges, enjoyments, and liberties, which should be a predominant idea in domestic life; this done, and both are equally interested in all that concerns the family, and are equally united in all their plans and labors. Selfishness and exclusiveness in one excite similar feelings in the other. When this is the case, the husband and wife have separate purses, their own individual enjoyments, separate interests, objects of pursuit and amusement, and their own company, however offensive to the other; because it has now become a matter of selfishness. The question has been frequently asked, "Supposing a person should, after marriage, find himself united to a being who is not congenial, what shall be done?" Answer: Make the best of a bad bargain. There will be generally some redeeming trait in every character, however marred, degraded, or depraved. The thoughts should center upon this trait, and the differences lost sight of. It would have been better and wiser if the person had never entered the matrimonial state; but when the door has once been entered, we should endeavor to conform as far as possible to our mate, plucking the roses, and leaving the thorns and briers that spring up in our path. If we see defects and deficiencies, they are never remedied by contemplating them, or exposing them indiscreetly to others, or even to our bosom and intimate friends. Perfect love is secured by having and manifesting an elevated standard of love, and by modifying the more animal feelings by the reasoning and moral sentiments. Love, as it is generally exhibited in courtship and after marriage, is too physical, animal, contracted, and selfish. The more intellectual and moral qualities are lost sight of, or obscured by the mere animal and physical qualities; whatever feelings are predominant in the one most active will excite and bring out the same qualities in the other. Thus in many instances, to all

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appearance, the best and most refining qualities are permitted to lay dormant through life.

Many Persons who Marry the Second, THIRD, OR FOURTH TIME, manifest different characteristics each time, upon this principle, that different persons call into action different mental qualities, and give little opportunity for the manifestation of other faculties. If the more active and influential of the two is moral and virtuous in feeling, and circumspect in conduct, the natural influence of that mind on the other will be to bring out the same qualities and to restrain opposite tendencies of mind; but let the more active one be less moral, virtuous, and refined, and the tendency of that influence is the reverse, and different qualities of mind are brought out in the other character; and so on of all the various influences brought to bear on the mind. Again: let the more influential one have a due proportion of both spiritual and physical love, with a well-balanced mind, and the influence will be more salutary and extensive.

Perfect love and union are secured by understanding one's self mentally and physically, so as to be able to decide to the best advantage what kind of an organization would be best adapted to our own; without this knowledge our judgment is biased, and our object seldom obtained. No one is truly qualified to make a proper and judicious selection of a companion without this thorough acquaintance.

If the Evils of an Unhappy Marriage CAN BE AVOIDED, THEY OUGHT TO BE BY ALL MEANS; for miseries in a family sap the very foundation of all happiness and enjoyment.

It is as easy for us to become acquainted with the elements of our own natures as of any other subject, and the knowledge is of as much importance and benefit.

To know Ourselves and Others CORRECTLY is not sufficient. We need proper self-government and presence of mind to act according to that knowledge, and to be guided by it in the selection of companions. In order to secure perfect love, and enjoy all its blessings, we should be guided by an elevated standard, one based upon the most important and desirable objects and qualifications of love. But, on the contrary, those persons ignorant of the difference between the inferior and superior qualities will be as liable to be influenced by the inferior as the superior; by physical as well as mental; by the external trappings, as by internal truth; by the enchantments of dress, as by the real,

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living elements; by art, as well as by nature. A dimple in the cheek or chin, a certain color to the hair or eye, a peculiarly-shaped hand, foot, or waist, an eccentric way of looking, laughing, walking, talking, singing, or playing, a certain profession, so much money, or such a rank in society, will be a sufficient attraction for them to jeopard their happiness for life. Guided by the animal, they would as soon "fall in love" with a painted face, a finely-dressed head, a compressed chest, a false bust, a fine dress, or form, as to prefer the amiable and affectionate disposition, a high standard of virtue and morality, correct principles, good intellectual powers, a well-trained and balanced mind, with the age, knowledge, and experience necessary to discharge the duties of a companion and parent. That, in either sex, which creates the greatest interest in the opposite party, is the thing which indicates the standard of the person thus interested.

The Fault of Young People in these matters arises from two sources: Their love is too physical, animal, and selfish. They take too contracted views of married life, of its duties and responsibilities. They are urged forward too much by blind impulse to a state from which too many would gladly return, if the thing were possible.

Lovers devotedly Attached have no Occasion to use Artificial Means to entertain each other; they have no desire to gossip and tattle about their neighbors; for an exchange of their own thoughts, opinions, and feelings will be a sufficiently faithful source of entertainment and enjoyment. They will have no occasion to exert themselves to love and value the welfare of each other, or of continually purchasing each other's affections, and endeavoring to retain them by costly or desirable presents. It will not be necessary for either one to make *pretensions* to greatness, wealth, or elevation; for true love is based upon what really exists. Two kindred spirits can not help loving each other, if they will allow their minds to follow their natural inclinations; for their minds, feelings, sympathies, and affections will as surely run together and mingle as that two drops of water from the same fount will unite. Artificial or pretended love talks loudly, largely, and fast, and has many pretty smiles and graceful movements. Real love says but little, and that in a low, soft, and gentle tone of voice, the adhesiveness of one inclining to that of the other.

The Object in Visiting before **Marriage** should be to compare notes, to become acquainted with each other's capacities, education, circumstances, inclinations, and desires.

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When notes are compared, and found not to harmonize, then the parties can separate without injury to the affection of either; but if, upon a candid comparison of each other's capacities, inclinations, desires, and circumstances, there exists harmony and union, then they can unite understandingly, and the feelings will be sure to follow so honest and safe a guide as the intellect; when once married under such influences, there will be nothing to interrupt the love through life.

Too Long or too Short Courtships are equally objectionable. Sometimes there appear to be insurmountable barriers in the way. Fowler has the following case in point: A very worthy man paid his addresses to a young lady, his equal, and the acquaintance became so intimate that he spent most of his leisure hours with her, waited on her every opportunity, and so continued fifteen years. By this time the patience of the young woman became exhausted, and she resolved on bringing matters to a crisis. She informed her lover on his next visit that she was about to leave the city. "Are you?" replied he with surprise. "*When* are you going?" "To-morrow." "*Where* are you going?" "I don't know." "What shall I do? How long do you intend to be gone?" "I don't know what you will do, neither do I know how long I shall be gone," said she; "and now if you want me, say so, and take me; for now is your last opportunity." He took the hint, and they were soon married. After he had tasted of the sweets of married life, said he, "Wife, why did you not say so before? for we might have been married fifteen years ago, as well as now, if you had merely said the word. I was ready to marry, and resolved to make the proposal again and again; but each time my heart would rise in my throat, so that I could not speak." It is well that there is a leap year occasionally, so that the ladies have a little chance to act and speak for themselves.

Where a young man is as diffident as this man was, he is really to be pitied, and the intended bride is excusable if she aids in bringing the matter to a crisis. Where the courtship is too short, it does not allow of sufficient time for that acquaintance necessary to ascertain whether the parties are as much adapted to each other as the married life requires, especially without the aid of a practical knowledge of the science of phrenology, or a correct description of their characters by one who possesses that knowledge, without which there will be a risk at all times, and great danger in many cases of making mistakes.

Many Matches are the result of hasty and impulsive

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resolutions, to gratify pride, will, revenge, or a conquering disposition — all of which are wrong, and calculated to injure materially, if not wholly destroy, the noblest feelings of their natures. Another point should be attended to more than it is, in order to secure and retain that perfect love so much desired in married life. Man is very much the creature of habit and circumstances. Whatever impels the mind into action on its first appearance, is very liable to acquire an increasing influence over it, and gradually gain a permanent control of it; and those peculiar traits of character which are manifested at our first introduction to a person, who afterward becomes a friend, will make strong enough impressions to influence us materially in our future intercourse, not only in our thoughts and looks, but in our actions and conversation. The first few interviews stamp impressions which may influence the mind for life. We should, then, treat our intended, from the first, as we expect and intend to do during life. If a man commences an acquaintance by flattery, and obtains and secures the affections of his loved one in this way, he will find it necessary to use the same means continually to retain them.

Many Value their Friends for the presents they bestow, which are very often returned after a few months' use. I do not speak against the practice of bestowing presents as a friend, after persons are engaged; but it is a wrong principle on which to MAKE friends; for where love is gained in this way, it is too mercenary and selfish. If such a course be the best, then follow it. But if a perfectly honest, candid, and natural exhibition of the real feelings of our natures is the most desirable course to be pursued through life, then begin in that way, and continue it. LASTLY, IT IS ESSENTIALLY NECESSARY, IN ORDER THAT PURE AFFECTION SHOULD BE SECURED AND CONTINUED, THAT HUSBANDS AND WIVES SHOULD TREAT EACH OTHER JUST AS KINDLY AND POLITELY AFTER AS BEFORE MARRIAGE. I wish it were not necessary to urge this point; for it would seem that common sense, justice, and humanity demand it, and that pure affection would secure it; yet it is a lamentable fact that too many, if not a majority, of married persons are more polite, kind, and attentive before than after marriage; which is very often a fruitful source of contention and family bickerings.

If a Man Strives to Please and Make HAPPY HIS INTENDED, while she is a member of her father's fireside circle, surrounded by kind and tender parents, brothers and sisters, surely it is his duty to make double exertions to do so

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when she leaves all these sources of affection to unite her destiny with his. She goes, with a confiding, trusting spirit, to commit her all to her future husband — very often to find the gushing springs of her affection turned into bitter tears. And she is left to waste away neglected and alone.

Such Intimate Relationship as Marriage can not exist happily without love; and it is equally necessary that that love should be guided by enlightened reason. Although Nature has been free in endowing all human beings with the same natural inclinations to form social relations, and as no one has a right to prevent the fulfillment of that law of our nature, we are all under obligations to society and posterity. All, therefore, who value these considerations, should lend their influence, by precept and example, for their support and encouragement as heartily as for the fulfillment of any law of their country. In the name, therefore, of science, of humanity, of posterity, and of moral obligation, I say, no one has a right to marry unless he has the natural qualifications, mentally and physically, and has these functions properly guided by enlightened reason. That persons *will* marry is as true as that they have the natural liberty, and the inclination; consequently, it is the duty of those who are better informed to enlighten the more ignorant on this subject, so that they can obey the laws of their being, for their own highest happiness, and for the best interests of posterity.

The Majority of Evils existing in domestic life, doubtless, arise from an ignorance of the laws that should regulate them; and in consequence of this ignorance the human race is made wretched. In former days, this ignorance was winked at; but now that the light is beaming forth from every page of Nature's book, and "those who run may read" and understand, we are the less excusable for violating Nature's laws, and more loudly called upon to follow this light, and to act accordingly.

Marriage is often made a Matter of Feeling, with not enough Judgment. — Many are influenced by no other motive, when they marry, than that of being *in love*, and are thus led by the blind impulses of their nature to form a union for life without any regard for consequences. It being the duty of every healthy and well-organized person to form these matrimonial relations, in order to secure the greatest amount of happiness, it is equally our duty to understand the means to be used, so as to secure the greatest amount of happiness, not only to ourselves, but to our posterity. To the want of this knowledge, in connection with disobedience of the laws of our nature, can be ascribed most

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of our domestic difficulties — such as divorces, quarreling, fault-finding, jealousies, and murders, besides a long list of diseases which parents transmit to their children, — thus increasing sorrow and suffering until premature death closes the scene.

Happiness in Domestic Life can be made a matter of certainty instead of accident, if we would but obey the laws of our nature. The old maxim, that "Love is blind," is too true: it certainly needs a guide — which guide we have in the intellect, situated in the forehead, for the express purpose of taking the lead. This should have a prior influence in all the affairs of life — and the more important the transaction, the greater the need of its influence — and in no place is it more necessary than in forming our domestic relations, enabling us to understand the principles which are necessary to be taken into account in order to secure that happiness which man is capable of enjoying. But, instead of being guided by our judgment, and allowing our foreheads to take the lead, we have reversed the order of nature, and turned around and gone backward into married life, and allowed our feelings to take the lead until the time has passed when reason would be of any avail. Many show the contracted view they take of this subject, by the kind of companions they select, and the motives that guide them in their choice. Many allow one motive, qualification, attraction, condition, or circumstance to bias them, regardless of all other circumstances.

The Desire of Wealth, joined with indolence, often points to a *fortune*, instead of a companion — thus showing that some prefer to gratify one of the lowest and most selfish feelings of their nature at the expense of all other considerations. If happiness be really the object of individuals governed by motives of this nature, then do they lay themselves open to sad and grievous disappointments — for, it being known that this is a *consideration* which leads many to marry, some who have poverty written upon their personal attractions will *pretend* to be rich, and display the appearance of wealth until the object has been obtained, and the union consummated, which of course puts a finish to further deception. The reality being known, must produce very unpleasant feelings.

When both parties, acting upon this principle, are mutually deceived, their disappointment is equal, and its consequences just.

In Cases where no Deception is Used, but a fortune obtained, it is generally a source of constant bickering and observation on one side, and of mortification on the other,

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unless he or she possesses the cool philosophy of the man who, in reply to the observation of his lady, that her money bought the horse upon whose virtues he was expatiating to a number of his friends, said, "Yes, and your money bought me too."

Many think that Matches are made IN HEAVEN," and that there is an overruling Power that specially directs them all; or, at any rate, that the Lord will not allow any marriages but those which are as they should be. So all think before, and many after marriage, still there are a vast number who, from the experiences they have had, think quite the reverse.

Some have alone the Motive of CONQUEST — a motive which should never exist — while others are actuated by *ambition*, esteeming rank and honors as the greatest prize: a most unpleasant situation, unless a fortune accompanies the union; — while others are influenced not so much by pure, strong, and proper attachments, and the desire of a permanent settlement and home of their own, as by motives of curiosity, by desire of change, and to have the name of being married.

While Complying with these TENDENCIES OF OUR NATURE, we are liable to be influenced by motives and resort to means which have an injurious influence, and should therefore be avoided. In paying our addresses to each other with the intention to marry, we ought never to trifle with each other's feelings, by teasing, quizzing, or deceiving. The evils arising from such a course are twofold: it unhinges the judgment, and disqualifies the parties from making it an honest, serious transaction. It sows the seeds of future discord, jealousy, suspicion, and contempt.

Duties of Parents and Teachers. — They should secure the confidence of their children, so that they will be disposed to ask and to take advice of them in relation to their social matters. They should be a guide and example to their children, and a living witness of the manner in which the social feelings should be properly exercised.

They should educate them with the design of making them good husbands and wives, instead of giving them a fashionable, superficial, polite, and showy education, filling their heads with false ideas of society, and how they can most successfully entertain company and secure offers of marriage. Many parents are greatly at fault in this respect, who allow their children to mature for marriage, and encourage them to anticipate it with no qualifications to enjoy it themselves, or to render those happy with whom they are connected.

Parents are under a greater obligation so to educate and direct

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the minds of their children, as to secure a happy marriage, than to establish them in business; for much more happiness is involved in a good social settlement than a business one.

Some parents are anxious about their children at the wrong time, allowing their children to mature, apparently regardless of who or what they love; giving, as it were, a tacit consent for the affections to cement until the hand of the child is asked in marriage. Then they stoutly refuse their assent, and violently oppose the union as though they had the highest regard for the child; but, in many cases, this is too late, and is almost certain to ruin one or both the parties concerned.

There should be such an intimacy between the parent and child, that the latter will be disposed to consult the former in these matters from the first. There will then be no occasion for disappointments; for, to have the attachments forcibly broken off, is sometimes as injurious as it is to be unfortunately married. Besides, it is the duty of the parents to retain the affections of their children until they shall have the same degree of judgment to guide them in matters of love as in other matters.

The father should so effectually retain the affections of the daughter, and the mother of the son, that they may not be disposed to change the object of their attachment till they have arrived at years of discretion. As soon as parents, by their improper management, destroy the natural attachment existing between the parent and the child, the child will seek some other object of affection, either at home or abroad, which is frequently the commencement of many family difficulties. HOME SHOULD BE MADE THE MOST PLEASANT SPOT ON EARTH, THE CENTER OF ATTRACTION, THE BOWER WHERE THE WHOLE FAMILY CAN REPOSE TOGETHER IN LOVE, CONFIDENCE, CONCORD, AND HARMONY.

Important to the Unmarried.—To one and all I would say, do not marry unless you love, and do not love, unless guided by reason and judgment. Do not marry contrary to your own judgment and inclinations, merely to please your friends; for, this reflection does not bring domestic peace when you find that you are confined to one not at all congenial to your feelings; your happiness, in married life, will depend on your *union*, and not *how* it was brought about.

Do not be so Accommodating as to give your hand and virtue to a man without your love because you can not bear to see him weep when refused; or, because you are afraid of hurting his feelings, if you refuse him, is a spirit that would hardly

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be recognized among *angels*, and much less should it be among human beings, where their own welfare and that of posterity depend on a different course of conduct.

Do not Marry then, *in any case,* to avoid importunities and puerilities, or to save the tears and feelings of others; as selfishness, if it can be so called, or rather self-love, is justifiable in this case.

Do not Marry because you think it is the last opportunity. To refuse good offers in hope of obtaining those more eligible, and then, through fear of living in single blessedness, to accept because you think you will have the "crooked stick at last," is like a man grasping a straw to save himself from going over the dam. Never marry to get rid of the stigma of being called an old maid, or an old bachelor.

It is an honor and a credit to many that they have had prudence and sense of duty sufficient to control their feelings, and to enable them to remain single. Many, by not consulting their organization and qualifications for married life, have brought great evils on themselves and also on posterity, simply to show the world that they *can* marry, and thus remove the reproaches (that many fling) of a single life.

Do not Marry with the Determination to rule or not to be ruled. There is scarcely anything appears more foolish than this absurd feeling of "I am not to be dictated to," "I will have my own way," "I shall not sign away my liberty, *I* can tell you," etc. — the lady afraid to yield, for fear complete submission will be the result; the husband, from dread of *appearing* to be under "petticoat government." It can not be too strongly impressed on your minds that "mutual forbearance is the touchstone of domestic happiness." "The ANGEL of the marriage covenant bears the inscription on each wing, which he *folds in sorrow* when the admonition is *unheeded.*"

Do not be so Modest as to let one do all the courting, the other replying only in monosyllables; for very frequently the tongue becomes more pliable, or gets loosed when damages can not be repaired.

Playing the "Dumb Belle" and silent lover, is a very silly mode of transacting business. No; it is your duty to unfold your characters in their true colors to each other. In the married state, it is your *duty*, and should be your *pleasure*, to sympathize with and console each other, and thus beget a winning and soothing confidence that does much towards making home desirable and happy.

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Do not Marry a Coquette or a Flatterer. A coquette has *no* heart, and a flatterer but a *hollow* and *deceptive* one.

Do not Trifle with your Affections, by keeping company as a matter of curiosity or of opposition.

Do not be so Precise and Regular in the time that you make your visits — both parties thus prepare for such occasions by embellishing and rendering their appearance foreign to nature; each parades his or her good qualities to the front, and shows how pleasant, kind, agreeable, and polite they can be when they are *prepared* for it. From using these forced and artificial means to entertain each other, an acquaintance is made with one's abilities for *pleasing* only, and not for *displeasing;* the disagreeable traits of character, not being necessary, are concealed; but the occasion over, they manifest themselves in right good earnest, and when it is entirely *too late* — the words "for better or for worse" have been pronounced. In your courting days you had the *better*, but now you are prepared to appreciate the meaning of the latter term. It is a positive fact, that men and women are not heroes and angels, except upon the pages of a romance.

When you are Married you will be obliged to come in contact while your faces are flushed by exercise, dresses disordered by labor, tempers a little ruffled by trifling circumstances and annoyances — when the toilet is not prepared with *extra* care, and many other trifles connected with "little responsibilities," establishing beyond a doubt that earth is not heaven, and poor human nature somewhat else than poetry. These things are so; and you may as well study each other in these situations, as when "dressed up" and seated in the parlor. In the one case, you are liable to be "*taken in;*" and in the other, knowing what to expect, disappointment can not creep in. Contentment must reign — giving a fair opportunity for happiness.

Do not excite Love by Stimulants. — The influences of love and wine should never be united. Men, when under the excitement of intoxicating liquors, are not in full possession of all their faculties; they have excited their animal propensities, and by so doing, have rendered the manifestations of their feelings brutal.

If you are very Poor, do not marry a person very wealthy, merely on account of his or her wealth, unless you wish to act the part of a servant, and to live with the continued reflection that you are eating another's bread, riding in another's carriage, etc.

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If you have Insane or Consumptive TENDENCIES, do not marry one who has the same, unless you wish to bring upon yourself, your family, and posterity, all the evils of hereditary disease.

Do not be so long in Courting as to change your mind, or so quick as to be rash or ignorant of the character you have chosen. If you have no love in your soul, do not marry unless it is with one of a similar disposition.

The Organization of Children depends on two things; first, the organization of the parents; and, secondly, the influence of circumstances on the minds and activity of the various faculties and functions of those parents before conception, and particularly afterward on the part of the mother.

If, then, both parents have the same function very large or very small, the child must necessarily partake of that extreme, unless a change is produced by the force of circumstances. If both parents are idiots, the child will be idiotic. If very nervous or consumptive, the children will be so disposed. If conscientiousness, firmness, self-esteem, or any other organ is very small in the parents, they will be so in the child, unless it is rendered large by the great activity of these faculties in the parents. If cautiousness, secretiveness, destructiveness, amativeness, or any of the animal propensities are very large and active in the parents, they will be manifest in the children.

If you are very Rich, select your companions yourself, instead of permitting another one to choose for you; so that you may not be troubled with the reflection that you were selected for your wealth.

Be sure that you have the Confidence AND SANCTION OF THE PARENTS before you proceed with your negotiations. To secure the affections of a young lady, and make arrangements to be married, and then ask the consent of the parents and be refused, is quite an unpleasant predicament in which to be placed. In this case you are left to one of two alternatives, either of which is unfortunate: to marry contrary to the wishes of friends and parents, or sacrifice your love, both of which might have been avoided if the necessary precautions had been taken in season. Do not marry so much above or below your sphere as either to secure the contempt and the reproaches of friends, or fail to adapt yourself to the peculiar condition of your companion.

Finally, do not allow *any* ONE faculty of the mind, *any* ONE *condition* of the body, *any* ONE favorable or flattering remark, the

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enthusiasm of the moment, or the excitement of passion, to balance all other considerations — thus bringing about a *partial* union, and securing the *possibility only* of imperfect happiness. Those individuals who are governed by selfish motives in these matters, will resort to dishonest and improper means to accomplish their object. They have not a sufficient amount of *conscience* or *principle* to regulate and control them; the consequence of which is, there can be no confidence placed in them; they are liable at any and all times to go or be led astray, and are especially unfit to assume the weighty responsibilities which devolve on heads of families. Persons of this character should be resolutely and determinedly avoided.

We should do it with an eye upon our mutual and individual happiness, remembering that perfect happiness can arise only from the proper adaptation and exercise of all our natural powers, socially, morally, intellectually, and physically; consequently, we should consult all of them, and gratify as many as possible. And, above all, we should do it with the reflection that from three to six generations of our descendants will be *directly* affected by the choice we make.

Matrimonial Chances. — This curious statement is from an English paper, being the registered cases of eight hundred and seventy-six women, and is derived from their answers as to the age at which they respectively married. It is the first ever constructed to exhibit to females their chances of marriage at various ages. Of eight hundred and seventy-six females, there married —

3 at 13,	113 at 20,	20 at 27,	6 at 34,
13 at 14,	86 at 21,	22 at 28,	2 at 35,
16 at 15,	85 at 22,	17 at 29,	0 at 36,
43 at 16,	59 at 23,	1 at 30,	2 at 37,
55 at 17,	58 at 24,	7 at 31,	0 at 38,
66 at 18,	36 at 25,	5 at 32,	1 at 39,
115 at 19,	24 at 26,	7 at 33,	0 at 40.

One Remark before I close, particularly for your own good. STUDY WELL YOUR OWN CHARACTER, AND THAT OF THE ONE WHOM YOU SELECT AS YOUR PARTNER FOR LIFE, BEFORE YOU MAKE THIS IMPORTANT CHOICE. Ponder this well, be governed by it, and happiness is yours. Neglect it, and misery is surely your destiny.

The Influence of Marriage on Health, LONG LIFE, AND HUMAN HAPPINESS. — Among unmarried men, at the ages from thirty to forty-five, the average number of deaths is only eighteen. For forty-one bachelors who attain the age of forty, there are seventy-eight married men who do the same. As

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age advances, the difference becomes more striking. At sixty, there are only twenty-two unmarried men alive for ninety-eight who have been married. At seventy, there are eleven bachelors to twenty-seven married men; and at eighty, there are nine married men for three single ones. Nearly the same rule holds good in relation to the female sex. Married women, at the age of thirty, taking one with another, may expect to live thirty-six years longer; while for the unmarried, the expectation of life is only about thirty years. Of those who attain the age of forty-five, there are seventy-two married ladies for fifty-two single ladies. These data are the result of actual facts, by observing the difference of longevity between the married and the unmarried.

Fowler's Celebrated Appeal to Man.—"And now, O man! I carry the appeal home to thy inmost soul. By all your love to the mother who bore you, to the sister that dotes on you, and to the dear one whose gushing tenderness you have won, as well as to the gentler, angelic sex, I beseech you, GUARD THE SANCTUARY OF FEMALE LOVE AND VIRTUE! But should this appeal prove unavailing — even though you "fear not God, nor regard man," nor woman — yet, at least, for your *own* sake, preserve both her affections and her person. She defiled, what becomes of *man's* domestic happiness? Her every instance of frailty reacts on him; so that even his *own* interests should induce him to preserve her pure. Especially, since she does not seduce herself, should he charge her frailty to his own perfidy and carnality. Tenfold is his guilt, since he can not possess her person without first ravishing her affections! Defiling her body, a mountain in itself is but a molehill compared with blighting her *affections!* Her *soul* humbled! Her whole nature, with all its charms, all its capabilities of conferring and experiencing enjoyment, even all its angelic *perfections*, laid in ruins! All her joys converted into sorrows! Blasted be that fiend in human shape who does this wicked deed! Hurled — ay, even *hunted* — from society! Scorned by man, spurned by woman! Uncheered by one ray of love. The plagues of Egypt be upon him! The mark of Cain! The blasts of Sirocco! Compared with this crime, murder is innocence. Even hanging is too good for him, unless hung a lifetime. The deepest place in *hell* is his, because his sin is greatest. And he *is* hung *for life!* Is in a perpetual hell on earth, the fagots and brimstone of whose flames he himself has piled and lighted; while from the heaven of love, and all its joys, he has for ever excluded himself. The raging fires of this hellish passion are lit up all around him, all within him. Pestilence is his

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very breath. Moral stench, his only atmosphere. Gross sensuality, his perpetual wallowing-place. A living purgatory, within and without, his endless portion; because that very blackness of depravity which can ruin unsuspecting woman *is* that deepest sin and suffering which constitute hell itself. And what sin or misery like his?

"Him I reprobate, his victim pity. *Pity both*—him for his ignorance and depravity, her as their sacrifice; him for driving the car of passion thus recklessly, her as being crushed beneath its wheels. Neither know what they do. Still, I commiserate her most, because, though least guilty, yet most severely punished by that false state of public sentiment which condemns her as most vile, and her very presence as moral pollution itself, yet censures him less than for committing some trifling misdemeanor. Though plighting his solemn vow of marriage, as the only means of accomplishing his diabolical end, yet he suffers little or none in either standing or business, while she is turned out either to starve, or else to live on the wages of her own shame and sin. He flirts again, and yet again, ruining victim after victim; she is spurned by all, yet perpetually disgusted and tormented with the lascivious winks of those who interpret her fall as the guideboard to carnality, and who, if refused, act, 'louder than words,' 'why not me as well as him?' O Society, thou *art* a tyrant! *Why* this fish of one and fowl of another? And of the *wrong one?* When wilt thou treat erring woman as our great Exemplar treated the sinning Magdalen? When, and as far as, thou followest His precepts and examples. This proscriptive spirit is not Christianity, is not humanity, is not philosophy. It does not deter others, yet it ruins uncounted thousands of those whom forgiveness would save. The odium heaped upon those who have made one false step, literally *drives* them on down the broad road to destruction, and heads off every attempt to reform. This state of public sentiment is the great peopler of houses of infamy, which the restoring spirit would rob of tenants. Does God forgive us our trespasses, and shall not we also forgive one another? Shall we pray 'Our Father, who art in heaven,' to 'forgive us our trespasses *as* we forgive' others, and yet be relentless toward our fallen sisters? How *dare* we invoke from Him that vindictiveness touching our own sins, with which we persecute her who is seduced by man's libidinousness, not her own? And are *we* so *very* 'pure *in heart*' that we could cast the first stone? Even then, shall we not rather say, with our Pattern, 'Neither do *I* condemn thee,' only 'sin no more'? Nor are the most condemna-

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tory themselves always the most virtuous. *The reverse.* Who arraigned the frail woman before Christ? To a man, guilty of the *same* crime. Who berate the fallen most? Those who walk nearest the edge of the same precipice, and require only allurement to leap it; because they look through the colored and magnifying glasses of their own corrupt feelings, and are therefore both the most suspicious and censorious — suspicious, because they judge others by themselves; censorious, because themselves censurable: whereas, purity is unsuspecting, and virtue tolerant and forgiving. Who in our towns and circles the most violently denounce the moral reform movement as improper? They whose illicit pleasures it abridges. This is fact, and supported by philosophy; while the 'pure in heart' are the most 'merciful,' as well as the most assiduous in their labors of prevention and reform."

CHAPTER XL.

CUSTOMS, CHARACTER, AND CONDITIONS OF MARRIAGE IN CIVILIZED AND SAVAGE COUNTRIES.

[The following truly entertaining chapter is selected from facts in various historical records of the earliest ages to the present time.]

If we accept the scriptural account, we find that though Adam had but one wife, his immediate descendants, in his lifetime, married a greater number. And when we come down to the primitive history of the Hebrew race, after the deluge, we find the holy patriarchs taking wives and concubines, without any apparent restraint, and with no guide but their inclinations and ability to take care of them. Thus Abraham had eight or nine wives or women; and Isaac and Jacob each had several. The practice of having a plurality of wives, introduced in the lifetime of Adam, has ever since been the custom of the greatest portion of the world; and this custom is so fixed, so seemingly ineradicable, that even Christian missionaries have been obliged to give up the point, and despair of converting men to Christianity, if the giving up of all but one wife is insisted upon. The polygamist can not be made to understand or believe that his practice is contrary to the law of nature, or the requirements of religion; and our missionaries have, with what

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wisdom or propriety we shall not attempt to decide, concluded to leave this matter to the workings of time or the influences of grace.

We purpose now, commencing with the earliest ages of which we have any account, to give an impartial history of the connection of woman with man in the marriage relation in all the countries in the world, and among all the races and tribes of humanity. Such an account can not but be interesting, and we trust that it may prove instructive.

The first difficulty we encounter is the question whether the human race arose from a state of barbarism, or sunk from one of purity and intelligence. That God instituted marriage by creating man male and female, may be true in no other sense than it evidently is in regard to the other animals, which were also thus created, and have by natural constitution such relations to each other.

In existing nations most primitive and savage, marriage is the unceremonious appropriation of one or more females by the right of the strongest. We may suppose that the same was the case before the dawnings of civilization. But very early in the history of our race we find contracts made with certain impressive solemnities. Covenants were made memorable by an exchange of presents, still a custom among barbarous tribes, and the "know all men by these presents," preserved in forms of law, may bear such a meaning. Abraham made presents of sheep and oxen; the Phœnicians set up a pillar or raised a heap of stones; the Scythians poured wine into a vessel, mixed with it the blood of the contracting parties, and dipped into it a cimeter, arrows, a javelin, and with imprecations on whoever should break the agreement, the parties and their witnesses drank; the ancient Arabians cut their hands, and sprinkled the blood upon seven stones, invoking the gods; the ancient Medes and Lycians sucked the blood from each other's arms; the Nasamones drank with each other; the Greeks and Romans shook hands, and swore by the gods and the tombs of their ancestors.

But the most common pledge of good faith is eating together. This is considered, all over the world, as a pledge of amity. A feast is, therefore, one of the earliest and most general modes of solemnizing a marriage contract; and for ages, and in many countries, it was the only one known. Marriage, as a religious ordinance or sacrament, has been recognized by but a small portion of the human race. It was such among the Greeks and Romans, who connected religion with all the actions of their lives, and invoked the gods in their most simple and familiar labors and pastimes.

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All nations, of whom we have any historical account, ascribe the regulation of marriages to their first lawgivers. Thus Menes, first king of Egypt, is said to have first introduced matrimony, and fixed the laws concerning it; the Greeks attribute the same institution to Cecrops; the Chinese to Fo Hi; the Peruvians to Manco Capac; and the Jews to God himself. Mythology would seem to teach monogamy, or the marriage of one wife, though polygamy was occasionally the practice. Thus Jupiter had only his Juno; Pluto his Proserpine; Osiris his Isis; and the stolen amours of the gods, with the jealousies of their wives, point very significantly to the idea of confining the relation to a single couple, in theory, whatever irregularities were tolerated in practice.

But if we look back to the patriarchal ages, in Oriental countries, where the highest type of humanity is held to have had its origin, we find polygamy to have existed time out of mind; and as we have before noticed, even in the lifetime of Adam, in the antediluvian period. In the early ages, a wife was of much consequence and value. Her labor was of great use, for from her skill in handicraft men derived shelter, clothing, and many of the comforts of their simple life. When men were long-lived, it was a great object to have many children, to take care of their flocks and herds, and for a defense against aggression. To be well served, therefore, and to insure a numerous progeny, men took a number of wives, and each wife strengthened the patriarch, by securing the friendship of the family from which she was taken. But as, in the order of Providence, men and women were born in nearly equal proportions, the demand for women caused a price to be set upon them, and the husband was obliged to purchase his wife, by paying a liberal sum; and this is still the case in China, where customs are petrified, and generally over Asia.

When the price agreed upon was paid, the marriage was celebrated with a feast. Laban gathered his friends and made a marriage feast, when he pretended to give Rachael to Jacob for seven years' labor, and then defrauded him by placing Leah in the nuptial bed, instead of her more beautiful sister, to whom Jacob was married seven years afterward. Samson, when he married Delilah, gave a feast which lasted seven days. The Babylonians carried the splendor of their marriage feasts to such an extravagant and ruinous extent, that they had to be restrained by law. Among the Scandinavians, the celebration of a marriage was a scene of revelry and drunkenness, frequently productive of the most deplorable effects. Such was the custom among the Jews in the time of Christ;

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and to this day, and in nearly all countries, marriage is celebrated with feasting and festivity.

The following Jewish form of marriage contract is doubtless a very ancient document: —

"On such a day, month, and year, A, the son of B, has said to D, the daughter of E, Be thou my spouse, according to a law of Moses and of the Israelites, and I will give thee as a dowry for thy virginity the sum of two hundred suziens, as it is ordered by our law; and the said D hath consented to be his spouse upon the conditions aforesaid, which the said A doth bind himself and all that he hath, to the very cloak upon his back; engaging himself to love, honor, feed, clothe and protect her, and to perform all that is generally implied toward Israelitish wives."

This was the written form of betrothal, and in all respects a civil contract. A simpler form was by a verbal agreement, and the passing of a piece of money before witnesses.

The Ancient Assyrians, in the front rank of Eastern civilization, at a very early period, established laws of marriage, which were of a singular character. Once a year they assembled, at a great fair, all the marriageable girls of a province, when the public crier put them up for sale at public auction. First were put up the most beautiful, for whom the rich strove against each other, until the competition carried up the price to the highest point. When one beautiful woman had thus been disposed of, one less favored by nature was put up; and here the auction was reversed; the question was not how much will any one give, but how little will any one take; and he who bid her off at the lowest dowry took her for his wife, so that the price paid for the beautiful went to give dowries to the ugly, and thus all were provided with husbands. As fortune and beauty are not often united, we find a similar provision growing out of our social arrangements.

The great attention paid by the Assyrians to matrimony is further shown by their having constituted a special court or tribunal, whose only office was to see that young women were properly married, and that the laws of this relation were observed.

The custom of purchasing wives appears to have generally prevailed as soon as the rights of property began to be respected, and men bargained and exchanged commodities, instead of taking them by force. From the moment property was recognized, everything was considered as property, even to a man's wives and children. Men bought their wives, sold their daughters, and, it is supposed, in

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many cases sold their children to service, since slaves were among the first articles of property and commerce known among mankind; and the sale of Joseph by his brethren was no extraordinary circumstance at that period. The idea of property in wives and children has never been lost, and is fully recognized by our common law, which gives an action of damages for adultery and seduction. A man who runs away with another's wife is mulct in so much money; and the law gives the same remedy for the seduction of a daughter — though the Legislatures of some of our States have recently added other penalties.

The regulation of the sale of wives by the Assyrians, which was an improvement upon their sale by parents, since it provided husbands for those who would not otherwise have been sought for, was not the only example in antiquity, of marriages being conducted by the state. The Thracians put up their fairest virgins to public sale, for the benefit of the government; and the magistrates of Crete exercised the sole power of choosing partners for their young men; and in the exercise of this power, interest and affection were overlooked — the good of the state being the only object of attention.

We know little of the marriage ceremonies of the Egyptians, Assyrians, and other nations of antiquity; and as their other public ceremonies are described with minuteness, there is no reason to suppose that weddings were attended with any peculiar observances.

In the History of Grecian Civilization we find marriage vows consecrated by a variety of beautiful and emblematic ceremonies, characteristic of that elegant and imaginative people. Even in the heroic ages, there was a meeting of relations and neighbors, when the happy couple was presented with a basket of acorns and bread, and there were feastings and rejoicings, more or less abundant, according to the ability of the parties.

In those later times of which we have a more particular account, the parties were betrothed by the father or guardian saying to the intended bridegroom: "I give you this, my daughter, to make you the father of legitimate children;" after which the young couple plighted their faith to each other by a kiss, and joining together their right hands. The Thebans plighted their troth at the monument of Iolaus, who, after his apotheosis, was supposed to have taken love affairs under his peculiar care. The Athenian maidens, as soon as marriageable, made offerings of little baskets of curiosities, at the shrine of Diana, to appease her anger with them for wishing to leave the number of her chaste followers. Jupiter, Juno, Minerva, and especially Venus and the Graces, were on marriage

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occasions propitiated with many offerings and ceremonies. These generally took place the day before marriage, when the parties, having cut off some of their hair, presented it to such deities as they most regarded.

On the morning of the marriage, solemn sacrifices were made; and as soon as the victims were slain, they were opened, and the gall-bladders taken out and thrown behind the altar, to intimate that all gall and bitterness must be left behind. The entrails were then carefully inspected for omens of good or bad fortune. If favorable, all were filled with joy; if otherwise, the nuptials were delayed or broken off. Superstitious imaginations looked elsewhere and everywhere for signs of prosperity or adversity. If a pair of turtle doves appeared in the air, the fidelity and happiness of the parties were considered secure; but if one appeared alone, it infallibly denoted separation, and all the ills attending an unhappy marriage.

If we may believe the ancient writers, these omens were sometimes arranged by the friends or enemies of the parties. An envious, discarded suitor, would manage to throw the wedding party into consternation, by letting fly a single dove; while officious friends would have pairs of them concealed, that they might appear at the proper moment. There are few superstitions which are not played upon by some such ingenious devices.

The bride and bridegroom, elegantly dressed, were further adorned with garlands of flowers; and cakes, made of the seeds of a plant remarkable for its fruitfulness, were distributed to the company. The house of the bridegroom, prepared for the wedding procession, was also ornamented with garlands, and a pestle was tied to the door, while a maid carried a sieve, and the bride bore an earthen vessel of barley; all emblematic of her housewifery employments. The procession was by night, and lighted with torches. First came singers and dancers, then the bride in a chariot, seated between her husband and one of his friends. When the bride alighted, the axle of the carriage was burned, to indicate that there was no return, and that the marriage was indissoluble. As soon as the young couple entered the house, there was thrown a shower of figs and other fruits upon their heads, as an emblem of the plenty and fruitfulness it was hoped they were to enjoy; and a feast — the most sumptuous which could be provided — was partaken by the guests, with songs and dances, and libations and invocations to the deities who presided over marriage. As this feast was intended to give the marriage publicity, it was considered an essential part of the ceremony.

The marriage supper being ended, the bride bathed her feet in the

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waters of a celebrated fountain, supposed to have peculiar virtues, and was lighted to bed by a number of torches, around one of which the bride's mother (whose privilege it was to light the torches) tied her own hair-lace. All the relations on both sides assisted in the solemn ceremonies attendant on putting the happy couple to bed. The young couple, left alone, were obliged to eat a quince together, while the young men and maidens commenced singing marriage songs of a very curious character; after which they retired, to return again early the next morning, and sing other songs appropriate to the happy occasion. The bride then presented a garment to her husband, and presents of household furniture were made to the newly-married pair by all their friends — which seems to have been a very sensible close of these marriage ceremonies.

In Sparta, marriages were managed in a very different manner. When the preliminaries had been settled by a female match maker, she shaved the bride, dressed her in men's clothes, and left her sitting on a mattress. The bridegroom stole to her privately, and as privately sneaked away; and the laws of Sparta obliged the married couple to observe this unmannerly conduct toward each other all their lives. In Sparta the men were all soldiers — the women, only the mothers of soldiers. Everything like effeminacy was carefully avoided. The laws of Sparta — noble in many respects — seem perfectly detestable in regard to the intercourse of the sexes, and the duties and pleasures which depend upon this intercourse.

Among the Romans there were three kinds of marriage: Conferration, Coemption, and Use. Conferration was the most solemn and august ceremony, and was only used when pontiffs and priests were married, and was celebrated by priests. This marriage consisted of a kind of sacrament, in which the married couple ate of a wedding cake, a part of which was offered, with other solemn sacrifices, to the gods of marriage.

Coemption was celebrated by the parties formally pledging themselves to each other, by giving and receiving a piece of money.

Use was that kind of marriage, where a man and woman living together, without any formal agreement, had children, and so remained together. In this case the marriage was considered valid, and the children legitimate.

The first two kinds of marriage were celebrated with many other ceremonies than those we have mentioned. The augurs were consulted, to ascertain the prospects of the parties, and to have fixed an auspicious day. The contract was drawn up, sealed with the

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seals of the parents, and the marriage portion deposited with the augur, while a plain iron ring was sent by the bridegroom to the bride. On the wedding day the bride's hair was divided, like that of the vestals, into six tresses, with the point of a spear, to teach her that she was to be a vestal to all but her husband; she was then crowned with a wreath of vervain and other plants gathered with her own hands, with a veil over the wreath.

In ancient Rome, when the couple stood up to be married, a yoke was put upon their necks, called conjugium, from which we have conjugal, or conjugial — meaning yoked together; this was to show that husband and wife must draw together their load of cares and duties. That the bride might seem reluctant to part with her maiden innocency, they pretend to force her from her mother's arms, by the light of five torches, borne by as many boys, in honor of the five marriage divinities — Jupiter, Juno, Venus, Diana, and the goddess Persuasion. The bride was then led by two young children to the house of her husband; behind her was carried a distaff, and a trunk or basket, in which was her clothing; at the entrance she was sprinkled with lustral water, and adorned with garlands of flowers and evergreens; she was presented with fire and water, and her name demanded. It was customary to answer, not by giving her real name, but by repeating that of Caia, a Roman matron, famous for her domestic and conjugal virtues.

There were still other ceremonies to be performed before the bride crossed the threshold. She put wool upon the door, and rubbed it with oil; after which she was carefully carried over the threshold, which it was very unlucky for her to touch on her first entrance. Immediately on her entering the house, all the keys were delivered to her, and a sheepskin, with the wool upon it, was given her to sit upon — to signify that she took charge of all domestic affairs, and was expected to provide clothing for the family. The newly-married pair were conducted to the nuptial chamber; the bridegroom scattered nuts to the children; and marriage songs were sung as among the Greeks. The next day the husband gave a public entertainment, when the bride, appearing on the same couch with him at table, leaned familiarly upon him, and in her discourse, showed such a contrast to her virgin modesty, that in Rome, when a woman talked indecently, they said, "She talks like a bride!"

From the marriage customs of the Greeks and Romans, we come naturally to those of the more northern nations of Europe. Among all these we find the most striking similarity. Fierce as were these northern barbarians in war, they were far superior to their southern

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and more refined neighbors in their regard and respect for women. They were treated as superior beings, to be loved, and cherished, and honored. From the remotest antiquity these nations had generally practiced a strict monogamy, and this marriage to a single wife was of a very solemn character. The father or guardian gave away his daughter with words to this effect: —

"I give thee my daughter in honorable wedlock, to have the half of thy bed, the keeping of the keys of thy house, one third of the money thou art at present possessed of, or shalt have hereafter, and to enjoy the other rights appointed to wives by law."

The husband then made a present to his bride, by way of dowry, and the relations of both parties were witnesses of what he gave. This bridal present was made up of no luxuries of apparel or jewelry, but commonly consisted of oxen, a horse, or a shield, spear, or sword; in return for which, the bride made her husband a present of arms or armor: and this interchange of gifts in the presence of witnesses, was esteemed the most indissoluble contract.

In later times the ceremonies became more imposing; and after the introduction of Christianity, the nuptial blessing was pronounced by a priest in church; and among the Franks the ceremony was performed in full court. After the ceremony, the young couple were crowned with flowers, and the day was spent in feasting and merriment; and at night, the whole company having seen the bride and bridegroom in bed together, drank to their prosperity, and retired.

Marriage, by priests, was practiced in Rome long before the introduction of Christianity. We have no account of the period in which the rite was first performed by Christian priests, but it was not generally done, until so formally ordained by Sotor, fifteenth Bishop of Rome, who decreed that no woman should be considered lawfully married, unless the ceremony was performed by a priest, and she was given away by her parents. This decree was recognized and obeyed at Rome, but in other parts of Christendom it met with violent opposition, and parents and magistrates continued to solemnize the marriage contract, until it was declared a sacrament by the church.

From this time until the Protestant Reformation the performance of the marriage ceremony was nearly monopolized by the clergy — and though commonly solemnized by them in Protestant countries, the right also belongs to civil magistrates. The exclusive right to marry was not the only one exercised by the clergy of the Middle Ages. No man was allowed Christian burial who had not be-

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queathed something to the Church, and a newly-married couple were not allowed to go to bed together for the three first nights, unless they paid for a dispensation. "In short," as a quaint writer observes, "a man could neither come into the world, continue in it, nor go out of it, without being laid under contribution by the clergy."

Marriage Customs of modern European countries vary but slightly. In most countries the intention of marriage is proclaimed in the church, on three successive public days, in order that any one who has legal objections to the match may have an opportunity to make them known. When the bride and bridegroom stand before the altar, the priest says to the man, "Wilt thou have this woman to be thy wedded wife, to live together after God's ordinance, in the holy estate of matrimony? Wilt thou love, honor, and comfort her, and keep her in sickness and in health; and forsaking all others, keep thee only unto her, so long as ye both shall live?" The bridegroom answers, "I will." The same question is then asked of the bride, excepting that she is required to "obey and serve," as well as "love and honor." Then her father, or guardian, gives her to the bridegroom, who takes her by the right hand, saying, "I take thee, ——, to be my wedded wife, to have and to hold from this day forward, for better for worse, for richer for poorer, in sickness and health, to love and to cherish, till death us do part, according to God's holy ordinance; and thereto I plight thee my troth." The bride then takes him by the right hand and repeats the same form, with the addition of the word "obey." The bridegroom then puts a golden ring on the fourth finger of her left hand, saying, "With this ring I thee wed, and with all my worldly goods I thee endow; in the name of the Father, the Son, and the Holy Ghost. Amen." They then kneel before the altar, while the priest utters a prayer for their temporal and eternal welfare; at the close of which he joins their hands together, saying, "What God has joined together, let no man put asunder." Among many of the Protestant sects weddings are not celebrated in the church, but at the house of the bride's father, or some near relation. The members of the society of Friends have neither priest nor magistrate to officiate at the ceremony. The bride and bridegroom take each other by the hand, and make the required vows to each other, in presence of the congregation and the elders; a public record of the transaction is made, and attested by witnesses.

It is a general idea that white is the most proper color for a bridal dress. Garlands and bouquets of orange-buds, and other purely

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white blossoms, are almost universally worn; and pearls are considered the most appropriate jewels. In Holland, the apartment in which the bride habitually resides, with all the furniture in it, is decorated with garlands; everything belonging to the bridegroom, even his pipe and tobacco-box, is adorned in the same manner; and a triumphal arch is erected before the house, or festoons are suspended at the entrance. Among the Tyrolese, and in several other parts of Europe, it is customary for the young couple to be escorted to church by a gay procession, wearing flowers and ribbons, dancing, playing on instruments of music, and firing pistols by the way. A part of Bohemia, called Egra, seems to be the only place where a wedding is not considered an occasion of rejoicing. There it would be deemed indecorous for the bride to appear in white garments, or adorn herself with jewels and flowers. She wears her usual black dress, with a cloak of the same color, with a rosary in one hand, and in the other a veil, with which to cover her during the ceremony. In this dismal attire, she demurely proceeds to church, attended by her relations, who preserve the utmost solemnity of countenance.

In Lapland, it is death to marry a girl without consent of her friends. When a young man proposes marriage, the friends of both parties meet to witness a race between them. The girl is allowed, at starting, the advantage of a third part of the race; if her lover does not overtake her, it is a penal offence for him ever to renew his offers of marriage. If the damsel favors his suit, she may run hard at first, to try his affection, but she will be sure to linger before she comes to the end of the race. Thus no marriages are made contrary to inclination, and this is the probable reason of so much domestic contentment in Lapland.

In the cold climates of Lapland and Iceland, the bride, instead of garlands, wears a crown of silver gilt. In Russia, the priest places silver crowns on the heads of both the bride and bridegroom; at the marriages of people of rank, these crowns are held over their heads by attendants. In some districts the peasant bride wears a wreath of wormwood; and in that country of perpetual flagellation, it is an appropriate emblem of her unhappy lot. After the nuptial benediction is pronounced, it is likewise customary to throw a handful of hops on her head, with the wish that she may prove as fruitful as that vine. In some Russian villages, it is customary, before the bridal procession goes to church, for a choir of young girls to chant this epithalamium: "A falcon flies in pursuit of a dove. Charming dove, are you ready? Your mate is come to seek you." The bride

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timidly answers "Yes;" and the procession moves forward. After the wedding ceremony is performed, the bridegroom has a right to give his bride "the kiss of love," holding her by the ears. The Sclavonian women, for a week previous to their marriage, are expected to kiss every man who visits them, in token of general respect and friendship for the sex.

Some Nations consider the ceremony of betrothal nearly as solemn as that of marriage. Among the Tyrolese, the father of the lover proceeds to the house of the beloved, accompanied by his younger sons, carrying baskets of honeycomb and aromatic plants. When he arrives, she and all her friends rise and salute him. "Welcome, my friend," says the head of the family; "what brings thee among us?" He replies, "As thou art a father, let me put a question to thy daughter." He then steps up to the maiden, kisses her forehead, and says, "God bless thee, lovely girl, who remindest me of the days of my youth. I have a son; he loves thee. Wilt thou make my declining years happy?" If the damsel is too much embarrassed to reply, her mother, who is the confidant of her sentiments, answers for her.

The young man is then introduced, and receives a kiss from his new parents and his future bride. Sometimes, in order to try the sincerity of their son's attachment, the old people will not allow him to be formally betrothed to the object of his choice till he has made a tour into Switzerland, Bavaria, or Italy, to sell some of the productions of the country. "Go, earn thy wife," say they; "a good husband must be able to earn bread for his family." The lover almost invariably returns unchanged, bringing the proceeds of his industry, with the ribbons still waving from his hat, which had been placed there by the idol of his heart.

In Parts of Russia young people are solemnly betrothed in presence of their families. A garment of skins is spread on the ground, and the young people kneel upon it. When they have interchanged rings, the girl's father places on their heads one of the household saints, and pronounces a blessing. In former times he gave his daughter a few smart strokes of the whip, and then delivered the instrument of punishment to his future son-in-law, to signify that he transferred his authority to him; but this brutal custom is now abolished. Russian husbands were formerly intrusted with power of life and death over their wives and children; but this law is ameliorated. In Scotland and some other parts of Great Britain, lovers, when they plight their troth to each other, break a small coin, and each one wears half of it next the heart.

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In Scotland, a mutual promise to consider each other husband and wife, if it be given in the presence of two witnesses, constitutes a lawful marriage; and in that country, as well as in some parts of Germany, if a man makes public acknowledgment that he considers a woman as his wife, it gives her, and all the children she may have borne to him, the same legal rights they would have had if the marriage had been duly solemnized.

It is customary in all parts of Christendom for parents to give a dowry with their daughters, proportioned to their wealth; even the poorest usually contrive to bestow a few articles of clothing or furniture. It is likewise a common practice for friends to send presents to the bride a few days previous to the wedding. When the Welsh peasantry are about to enter into the matrimonial state, they send a man round to invite their friends, and to declare that any donations they may please to bestow will be gratefully received, and cheerfully repaid on a similar occasion. After the wedding party has partaken a frugal entertainment of bread and cheese, a plate is placed on the table to collect money from the guests; and the young couple generally receive as much as fifty or a hundred pounds to furnish their household establishment. The village girls, in nearly all countries, are ambitious about having a few pieces of cloth and coverlets woven in readiness for their marriage portion; but in most cities, the extreme poverty of the lower classes usually prevents even this simple preparation. In the Greek island of Himia, the inhabitants gain a livelihood by obtaining sponges for the Turkish baths; and no girl is allowed to marry till she has proved her dexterity by bringing up from the sea a certain quantity of this marketable article.

Before the time of Francis the First, one hundred livres, about fifty pounds, was considered a very handsome dowry for a young lady; but at the present time, a fashionable and wealthy bride would expend a larger sum than that upon a single mirror. In nearly all countries a feast is given to relations and friends on the occasion of a daughter's wedding; and the entertainment is more or less bountiful and splendid, according to the circumstances of the bride's family.

After the ceremony is performed, all the guests congratulate the newly-married pair, and wish them joy. The young couple generally choose from among their intimate friends some individuals to officiate as bridesmaids and groomsmen. These friends are dressed in bridal attire, and during the wedding ceremony stand on each side of the bride and bridegroom. In some places, the maidens

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chosen for this office carry the bride's gloves and handkerchief. In France, some people still retain the old custom of having a silken canopy supported over the heads of a young couple by their attendants. Those who affect display have five or six bridesmaids, and as many groomsmen; but it is more common to have one or two of each. The groomsmen are expected to make presents to the bride, and to be among the earliest friends who call at her new abode. The wedding cake is usually much decorated with flowers and sugar-work of various kinds. This is offered to all visitors, and a slice neatly done up in paper, and tied with white ribbons, is usually sent to intimate friends. The superstitious depend very much upon having a piece of wedding cake to place under their pillows; and if nine new pins from the bride's dress are placed in it, the charm is supposed to be doubly efficacious. The object is to dream of the individuals they are destined to marry. Sometimes names are written on small slips of paper, folded up and placed beside the cake, and the first one taken out in the morning reveals the name of the future spouse.

The Tyrolese place a similar value upon the bride's garland, and the pins that fasten it. The bride scatters flowers from a basket among the young men of her acquaintance, and these flowers prognosticate their future fortunes; the honeysuckle and alpine lily promise uncommon prosperity, but the foxglove is an omen of misfortune. The Tyrolese bridegroom distributes ribbons among the girls, to the different colors of which they likewise attach prophetic meanings. The Dutch treat their wedding guests with a kind of liquor called "the bride's tears;" and small bottles of it, adorned with white and green ribbons, are sent as presents to friends, accompanied with boxes of sweetmeats.

Having noticed the forms of marriage among the ancient and modern nations, with whose progress and civilization we are most intimately connected, we shall now proceed to glance at the customs of other nations and races.

In China, the increase of population is thought to be of such advantage to the state, that a bachelor of twenty is pointed at as an object of contempt. Matches are made for children, while they are yet infants; and as soon as they are of a marriageable age, the young gentleman sends the young lady a present; a splendid cavalcade, with music and banners, is formed, and the bride is conducted in state to her husband's dwelling. The bridegroom, who has never seen the bride, receives a key at the door, with which he unlocks the carriage that brings her. If not pleased with her appearance,

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he can send her back, by forfeiting the wedding presents, which are really the price he has paid for her; as a Chinese husband never receives anything with his wife but her clothes. The lady, however, has not the like option, and must submit to the choice and pleasure of her lord and master.

The marriage in infancy can only apply to the first wife, but not to the secondary wives or concubines who are subordinate to the first wife, who is mistress of the family. The children of all the wives and concubines are equal, and have the same title to their father's estate.

It must not be supposed that Chinese marriages are celebrated without any religious observances, for the friends of the parties do not fail to inquire of some priest whether it will be a happy match, and what day and hour will be the luckiest for its consummation.

Chinese wives are usually guarded with great strictness, and it is believed, are loved with much affection. The desire to get married is so great, among all classes, that the poor will sell themselves to slavery on condition of having a slave for a wife.

A woman of the upper classes, who unites beauty with accomplishments, brings from four to seven hundred louis d'ors, or from two to three thousand dollars.

The Tartars have different customs in different tribes. Those whose religion is Lamaism have but one wife, whom they can put away at pleasure so as to take another, and the wife can get rid of her husband with equal facility.

When a Calmuck wants a bride, he goes to demand her of her relations; if they refuse, he seizes his opportunity and carries her off on horseback, and if he succeeds in keeping her for one night in his hut she becomes his wife, and he pays her price.

When the Calmuck marriage is with the consent of all parties, a magician is consulted to fix the day, and he makes the impatient couple wait as long as he likes. On the appointed day, the bridegroom erects a new tent near that of the bride's parents. Her relations place her on a horse, to carry her to her husband; and custom requires that she should offer some coy resistance, but not to extremities. A priest purifies the hut with incense and prayers, the young couple squat down on their heels, side by side, and the priest comes and sits down before them, repeating the proper prayer. A dish of mince meat is offered, of which the man partakes, but the woman refuses. The caps of the bridal pair are then thrown into the hut, and an entertainment begins, which lasts till midnight. Before they separate, the married and unmarried women present

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have a mock contest for the bride, in which the former are always victorious, when they arrange her hair in matronly fashion, and consign her to her husband. After the first week of the honeymoon the nuptial tent is taken down, and the husband moves into his accustomed dwelling.

The Marriage of the Soongas, a Tartar tribe, consists of a race on horseback. The lady is mounted on a fleet horse, and if she permit her lover to overtake her, he conducts her to his hut, and she becomes his wife with no other ceremony than a marriage feast.

The Buraits take from one to five wives, each costing from five to one hundred and even five hundred head of cattle. The wedding festivities are kept up for five days, with singing, dancing, wrestling, and horse-racing, and each day a horse is killed to feast the company.

In Western Tartary women cost from twenty to five hundred roubles, though among the pastoral tribes, where they are cheaper, a very pretty girl can be bought for two or three roubles. The Tartars of these tribes have four wives, if they desire it, and concubines in addition, but poor people are content to have but one, until she gets old, when they take another. Merchants, who travel much, have several houses in different places, and a wife at each. The ceremonies are much like those above noticed.

Among the Katschinzes, a young man, too poor to purchase a wife, may work for her for a term of years, but if she is sold to another, or dies meantime, he must take her sister, or if she have none, he can get his wages. The bride must never look upon the face of her father-in-law after the day of her marriage, but in case of meeting him, must fall upon the ground and conceal her face until he has passed.

The Yakutes and Baschkirs always consult the inclinations of their daughters before they marry them, a piece of ceremony which, in most Eastern countries, is considered quite superfluous.

When the Syrian lover gets ready to send for his betrothed bride, he sends a female confidant to her with jewels for her head, arms, and neck. The bride is bathed, her hands are stained red, and her face is painted as handsome as possible. Her friends send her presents to the bath, and there is a feminine procession around the fountain, in which the lady displays all her new dresses and jewels. After this she sits in the corner the whole day with her eyes closed, except when it is necessary to open them to

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eat. With her eyes still shut she is placed on a horse, and with a great parade of musicians, attendants, and her dresses and household utensils, she is taken to the bridegroom's house, the people invoking blessings as she passes along.

Among the Arabs a priest joins the hands of the bride and bridegroom, and reads certain verses of the Koran; he then blindfolds the bride, and she is led by the bridegroom to his tent, on the top of which a flag is displayed, saying, "You are at home." He then returns to the company and joins them in feasting, singing, shouting, firing guns, and feats on horseback until midnight, while the bride remains blindfolded a week, the husband merely taking the bandage off for a moment when he first comes in, that she may be sure he is the right man.

The Armenian marriage ceremonies are a singular and elaborate combination of Christian and Oriental usages. The marriage having been agreed upon by the friends of the parties, when the bridegroom goes to bring the bride from her father's house to his own, his father-in-law gives him a new watch, and the nearest female relations hang pieces of gold tinsel on his hat. The bride is completely covered with her robes — not so much as the tip of her toe is visible. A thick linen veil, and another of tinsel or gilt paper, conceal her head. The priest leads her, blindfold, to the center of the room, and pronounces a blessing. They all go in procession to the bridegroom's. He is shaved and dressed in his wedding suit, each article of which is blessed by the priest. The couple are then led into an apartment, where the priest joins their hands, and knocks their foreheads together. Then he ties around their heads some strings of white and rose-colored silk. As he ties one round the head of the bridegroom, and as the crucifix waves over his head, the priest asks, "If she is blind, thou acceptest her? if she is lame, thou acceptest her? if she is humpbacked, thou acceptest her?" To each question the bridegroom answers, "I accept." To the bride, with the same ceremony, the priest says, simply, "Thou acceptest?" and she answers, "I accept."

The company shower pieces of money on the couple, the cross is waved, the priests chant. All the men except the bridegroom leave the room, the women remove the stifling weight of robes and veils, and the husband is allowed one momentary glimpse of the face of his wife, whom he has never before seen. The ladies kiss her, and then all the male relations are allowed a glance at her face and the favor of kissing her hand. Then come feasts and amusements for three days, at the end of which the bride is permitted to speak.

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The Hindoo Girls are married between the ages of seven and nine years, and the boys between twelve and fourteen. The wife must be of the same caste and family as the husband. Husband and wife may be children of the same father or mother, though not of both. Among the rich, expensive entertainments are given. Formerly no witnesses were required, and only this ceremony: the parties merely exchanged necklaces and wreaths of flowers, the bride saying, "I am thy wife," and the bridegroom replying, "It is true."

Once there was a custom for the priest to cut off one joint of the lady's third and little finger, and anciently both husband and wife sacrificed a joint, but the Bramins decided, that as this mutilation unfitted men for certain employments, the woman should lose two joints, which would answer for both.

In one of the kinds of marriages now customary in Hindostan, the father of the girl builds a nuptial bower in his garden. After ceremonious visits, presents, and sacrifices to the god of marriage, the bridegroom, richly dressed, is conducted by his friends to the bride, when they are carried about for several days in a palanquin, accompanied by a procession of their relations and friends. The evenings are enlivened by illuminations and fireworks. At the wedding dinner, the wife for the only time in her life eats with her husband. The Bramins are very busy in the whole affair, making sacrifices, invoking blessings, and performing numerous ceremonies.

The Bramins, by a peculiar custom, often take wives against their own will. If a father has a marriageable daughter on whom he wishes to see conferred the privileges of a Bramin's wife, he invites one to his house, and introduces the girl to him; she respectfully offers her hand to the unsuspecting visitor, and the moment he takes it, the father begins to repeat the genealogy of his family. This constitutes a legal marriage, from which there is no escape.

Among the Birmans marriage is merely a civil contract, over which the priests have no control. The law allows but one wife, but the rich have as many mistresses as they require, who live with the wife and are under her control. When she goes abroad they attend her, carrying her betel-box, fan, etc., and when the husband dies, his mistresses become the property of the widow, unless he has provided to the contrary. The marriage ceremonies, in all but the interference of the priests, are the same as in Hindostan.

In Tonquin, and Cochin China, men take as many wives as they please, but the first has preference.

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The Siberian Marriage Customs are very peculiar. In one tribe, after the marriage feast, the wife pulls off the husband's boots as a sign of her subserviency. In another, the bride's father presents the bridegroom with a whip, with which he disciplines his wife as often as there is any occasion. In another, the bridegroom's father brings him his bride, and seats her at the table. They have a wedding cake three feet long, which the father puts under the bride's veil, saying, "Behold the light! mayst thou be happy in bread and children." The day is then spent in festivity. At night the bride is carried on a mat to the bridegroom, with these words: "There, wolf, take thy lamb." Among the Ostiacs the husband can live with his wife at her father's as soon as he has paid half the price agreed upon, but he can not beat her without her father's consent, nor take her away until the whole price is paid. Among the Tchuktchi, adroitness in theft is so desirable an accomplishment, that a girl who is wanting in it stands a poor chance for a husband.

In Ceylon one of the principal marriage ceremonies consists in tying together the clothing of the bridegroom and bride, to signify that they are bound together for life. This ceremony is performed in the presence of their friends, and with such festivities as the condition of the parties will admit.

In Java there are three kinds of marriages. The first, and most common, is where the parties are of equal condition, or the bridegroom is the superior of the bride; the second is where the wife's station is much higher than that of the husband; and the third is a sort of half marriage, the offspring of which is not on an equality with the other children. This marriage is quite unceremonious, but the two other kinds are celebrated with some display. The first wife is always the head of the family.

Girls in Java are married at so early an age that a single woman of twenty-two is almost unheard of. A price is always paid by the bridegroom, who, on the occasion of his wedding, goes splendidly mounted, accompanied by his friends, with music, to salute his bride. She comes out and meets them with a low obeisance. They sit together on an elevated seat, and eat out of the same dish, after which they go to the mosque, and the nuptials are celebrated according to the Mohammedan ritual. Then comes a wedding procession through the village, a grand feast, and at the end of five days another procession, in which the bride is conducted to her husband's house. In some places the spinning-wheel, loom, and kitchen utensils are carried in the bridal procession. In others the bride washes the bridegroom's feet in token of subjection.

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In Sumatra the Battas have as many wives as they please, generally five or six, who all live in the same apartment with their common husband, but each has a separate fireplace. Husbands purchase their wives of their fathers-in-law, and gamble them away or sell them whenever they choose.

Among the Redjangs, another tribe, besides the purchase of wives, a man is sometimes adopted by a girl's father as a son-in-law, and both are subject to the parent; and there is another marriage, where both man and woman pay an equal price, and are on a perfect equality. The ceremonies are very simple.

In Borneo no man is allowed to solicit a damsel in marriage until he has cut off the head of an enemy. When this condition is fulfilled the lover makes presents to his mistress; if they are accepted, an entertainment is given by her parents, and on the ensuing day by his parents. After the feast, the bridegroom is conducted home to the house of the bride. At the door, a friend sprinkles him with the blood of a cock, and the bride with the blood of a hen; the parties then give each other their bloody hands, and from that time they live together. If a man loses his wife, he can not marry a second till he cuts off the head of another enemy.

In Celebes the husband receives no other dowry with his wife than the presents she obtains before the ceremony. As soon as the young couple are married, they are shut up in an apartment by themselves for three days; a servant brings them necessary food, while their friends are entertained with great merriment by the bride's father. At the end of this time they are liberated, receive congratulations, and are conducted to their future home.

The Customs of New Holland are rather curious. Before a girl is given to her husband two of her front teeth are knocked out. The lover then throws a kangaroo skin over her shoulders, spits in her face several times, marks her with painted stripes of different colors, orders her to march to his hut with his provision bag, and if she does not go fast enough to please him, he gives her a few kicks by the way. These savages generally steal wives from some tribe with whom they are at enmity. As soon as they observe a girl without any protector near, they rush upon her, stupefy her with the blows of a club, and drag her through the woods with the utmost violence. Her tribe retaliate merely by committing a similar outrage. There are no other wedding ceremonies; and this is marriage, and the treatment of the fair sex, in that state of nature which the poets have so much admired!

The Moors marry at a very early age. Wives are always

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purchased; and the father of the girl can not refuse an offer unless there is some stain upon the young man's character. The bridal tent is adorned with a small white flag, and the bridegroom's brow is encircled with a fillet of the same color. The bride is conducted to the tent by her parents, where her lover presents her with garments and jewels, according to his wealth. A grand entertainment is given, and the young women dance all day to the sound of instruments, while the spectators regulate their motions by clapping hands. These dances are not very decorous.

Marriages among the negro tribes are conducted with little ceremony, except an abundance of pastimes and dancing.

Among the Jereres, when a lover has secured the consent of relations, he summons his friends to assist him in carrying off the bride, who shuts herself up in a hut with her companions, where they maintain an obstinate siege before they conclude to surrender.

In Bambuk the bride comes to the hut of her husband with a calabash of water, with which she washes his feet, and wipes them with her mantle.

In Congo the negroes take their wives for a year on trial; if at the end of that time they are satisfied, the wedding is celebrated with a feast. The missionaries tried to abolish this custom, without success; the mothers declaring that they would not risk the happiness of their daughters by urging them to an indissoluble union with persons with whose habits and tempers they were not acquainted.

In Abyssinia there is no form of marriage ceremony; parties live together as long as they please, and these connections are dissolved and renewed as often as they think proper.

African Princes have an unpleasant way of furnishing a dowry for their daughters. When the Sultan of Mandara married his daughter to an Arab sheik, "the nuptials were celebrated by a great slave hunt among the mountains, when, after a dreadful struggle, three thousand captives, by their tears and bondage, furnished out the materials of a magnificent marriage festival."

In Dahomey all the unmarried females, throughout the kingdom, are considered the property of the sovereign. Once a year they are all brought before him; he selects the most engaging for himself, and sells the others at high prices to his subjects. No choice is allowed the purchaser. He pays twenty thousand cowries, and receives such a wife as the king pleases to appoint; being

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obliged to appear satisfied with the selection, whatever may be her aspect or condition. This king has three thousand wives; but the King of Ashantee has exactly three thousand three hundred and thirty-three, and the safety of his kingdom is supposed to depend on his keeping up this mystical number.

When a Hottentot wishes to marry, he drives two or three of his best oxen or sheep to the house of the bride's relations, accompanied by as many friends as he can collect together. The animals are slain, and the whole assembly rub themselves with the fat. The men sit in a circle round the bridegroom, and the women round the bride. A blessing is then pronounced on the young couple, which principally consists in the hope that their sons will be expert huntsmen, and prove a comfort to their old age. This blessing is accompanied with a curious and indecent ceremony, for the particulars of which we must refer the reader to authors who wrote in a less fastidious age. A feast is then prepared, and when they have all eaten voraciously, a pipe is lighted, of which each one smokes a few whiffs, and then passes it to his neighbor. Feasting is sometimes kept up for several days; but they have no music nor dancing.

The most striking difference which exists in the marriage customs and relations of different nations, is that of monogamy and polygamy — a single wife or husband, and a plurality. We have already noticed this difference, but there are many interesting circumstances connected with its considerations.

Monogamy, if it was the law in the beginning, was broken by Lamech, during the lifetime of Adam, according to the Genesis. The patriarchs and their descendants, the Jews, were always polygamists, not only marrying as many wives as they could support, but from Abraham down, taking wives of a second class, or concubines, as is now practiced in most Oriental nations.

Solomon, the personification of Jewish morals and magnificence, is said to have had seven hundred wives and three hundred concubines; but in this the general rule of having less wives than concubines was reversed. The whole number, however, is not greater than could be reckoned by many a monarch in Asia and Africa at the present day.

The example of the patriarchs and monarchs of the Jews was followed by the people generally, according to inclination and ability. Maimon tells us that among the Jews a man might have as many wives as he pleased, even to the number of a hundred, provided he could maintain them, and perform toward them the duties

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of a husband, in which he was not to run more than one month in arrears.

Polygamy has been allowed and practiced from the earliest ages in China, Hindostan, Persia, Turkey, Arabia, and in nearly all Africa, as we have seen, in describing the marriage customs of various nations. It was also practiced in most of the American nations and tribes, and from the earliest period of the world has been the law of more than four fifths of the human family.

But while in most countries a man is allowed to have as many wives and mistresses as he can maintain, this rule is sometimes reversed, and there are not wanting countries where women are allowed a plurality of husbands.

In Thibet one woman becomes the wife of a whole family of brothers, be they ever so numerous. This custom prevails among the rich as well as the poor, and in all classes of society. The oldest brother has the right of choice, and it is his right to select the family bride, and consummate the marriage. These privileged wives are said to be very jealous of their husbands, to enjoy great liberty, to be the acknowledged head of the family, and they are well supported by the joint earnings of their several partners. Travelers relate instances of five or six brothers living under the same roof with one wife, all in the greatest harmony and affection. The first-born child is considered to belong to the eldest brother, the second to the next eldest, and so on in proper rotation.

In some of the provinces of ancient Media women enjoyed the privilege of having a plurality of husbands. On the coast of Malabar the number a woman may have is limited to twelve, and among the Iroquois Indians of North America the circumstance of a woman having several husbands was not uncommon. Father Tanchard, a Jesuit missionary, reports that in the vicinity of Calicut, in India, the women of superior castes were privileged in the same manner, and that some of them had as many as ten husbands.

Herman Melville, author of "Typee," "Omoo," and "Mardi," assures us that it is the custom in the Typee valley, and it is probably the same through the Marquesas, for a young woman to have two husbands, one her senior by some years and the other of her own age, and he avers that this relation exists without the slightest disturbance, and that all three live together in the greatest harmony. "Extremes meet," and we find something very similar to this custom of the amiable Marquesans in the cicisbeism of some of the most polished countries of Europe.

Though the ancient Egyptians and Greeks were not generally

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polygamists, they allowed of concubinage. The fact that Homer makes Ulysses declare himself to be the son of a concubine shows that no discredit was attached to such an origin. But in some cases polygamy was allowed in Greece, from an idea that it would increase population. The Athenians, when population had declined, passed a law allowing a man to have children by another woman as well as his wife. Euripides is said to have had two wives, and the disquietude of this connection may have caused these lines, from the Andromache: —

"Ne'er will I commend
More beds, more wives than one, nor children cursed
With double mothers, banes and plagues of life."

Socrates, also, had two wives, and was not more fortunate than Euripides.

Polygamy, if not universal, was common over a great portion of Europe until a comparatively recent period; and it would probably have been of universal tolerance but for its general discouragement among the Greeks, its prohibition among the Romans, and the spread of the Christian faith, by which it was gradually eradicated.

But it took long centuries to do away this practice, with all the power and influence of the church. As late as the sixth century it was enacted as one of the canons of the Ecclesiastical Council, that any man married to several wives should do penance. Even the clergy, at this period, practiced bigamy, for it was ordained at the Council of Narbonne, that such clergymen as were the husbands of two wives should only be presbyters and deacons, and should not be allowed to marry and consecrate. This is in accordance with the direction of Paul, who says of a bishop, that he should be the husband of one wife.

Even as late as the sixteenth century, a plurality of wives was allowed in some of the Christian countries of Europe, and the German reformers were inclined to permit bigamy as not inconsistent with the principles of the gospel; and this was not without much plausible ground, since we do not find, that of all the early converts to Christianity, any were directed to divorce themselves from their wives, whatever their number.

Luther, who was applied to by Philip, Landgrave of Hesse-Cassel, for permission to marry another wife while living with his own, the Princess of Savoy, assembled a synod of six of the principal reformers. They decided that as the gospel nowhere in express terms commanded monogamy, and that as polygamy had been prac-

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ticed by the greatest dignitaries of the church, the required permission should be granted.

The famous Jack of Leyden married seventeen wives, and would probably have taken a much greater number had not his career been cut short.

In all countries where polygamy is allowed, the duties of wives and husbands are regulated either by positive law, or custom, which has all the force of law. Among the Jews, when a man married an additional wife, it was required that he should not diminish the food, raiment, or anything due to those he had previously. Mahomet, in permitting his followers to have four wives, foreseeing that some of them might be neglected by unjust husbands, positively instituted that everything should be equally divided between them; and this every good Mussulman regards as a religious duty. In the Maldivian islands, where the number of wives is limited to three, it is not permitted that the husband should exercise the least partiality.

The laws and customs which protect wives in their fair division of connubial rights and blessings, do not apply to concubines, who have no such protection, but are at the mercy of their masters' caprice.

In Turkey, wives, by custom, claim the society of their husbands every Friday night. All the rest of the week he passes according to his inclination, among the ladies of his harem.

Polygamy was practiced among the ancient Mexicans and Peruvians, as well as the more barbarous tribes in both North and South America. Montezuma II. had three thousand women. The Incas married only their own sisters, but were allowed a great number of concubines. The Peruvians, before the coming of Incas, are said to have had their women in common, with no recognized marriage relation.

Throughout all Africa polygamy is the general custom, and many of the negro princes rival Solomon and Montezuma. Some of the Guinea kings not only count their wives by thousands, but they form of them a life-guard or standing army, and they are therefore trained to military service. In Europe one woman is often too much for peace; but travelers assure us that in Africa many wives share one husband, and their only strife is to render him happy. There is not the least rivalry or jealousy. Each has her turn — each her week of particular attendance. There is no pretension of superiority. The husband is punctually obeyed. The height of honor and felicity is to merit the good fortune of sharing his bed, and this favor is seldom accorded, and only as the reward of good conduct. But

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the highest honor ever paid to a favorite wife is to bestow her temporarily upon a stranger who is partaking of his hospitality. This is the reward of the greatest merit, and is esteemed accordingly.

Among the Maroons of Jamaica the customs of Africa formerly existed, with slight modifications. When a man took an additional wife, he was obliged to make the same present to each of his former wives as to the bride. Each wife lived in turn with the husband for two days, while the rest were engaged in cultivating the grounds. The wives had their property separate from each other, but the husband shared with all, and the only jealousy known was caused by the husband noticing any of his children except those of his particular wife for the time being. So happy was this kind of family compact, that the missionaries, though they found the Maroons docile in all other respects, could not induce them to separate from their wives, nor could they be made to believe that the good God had commanded anything which seemed to them so unnatural and abhorrent.

Our missionaries, at the present day, find the same difficulty in all heathen countries, and no longer insist upon a breaking up of family relations as indispensable to Christian communion.

We have passed in rapid review the marriage customs of the world — but there are some things connected with the condition of women of which we shall treat.

The Character of Woman, as developed in the great Anglo-Saxon, or, as some think, more properly Anglo-Norman race, in Great Britain and her dependencies, and in the United States of America, is a subject of great difficulty. We can not easily lay aside our prejudices, or form proper opinions of the characters and conduct of those with whom we are intimately connected. We are liable to exaggerate both their faults and their virtues.

The ideal character of the English woman is a very lovely one, and those who approach to this ideal standard are worthy of all our admiration. She is free and pure, delicate and brave, tender and strong, full of love for her husband, her children, and friends, and of irreproachable constancy and chastity. This character is often realized among the educated classes of Great Britain, and more widely, perhaps, in the United States. If the female character is not developed in the perfection of virtue, it is not for the want of high standards of excellence. Our literature is full of them.

But we are not studying beau ideals of character; it is our duty to examine the existing realities; and in doing so we shall glance at English life, and then take a more careful survey of our own.

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English women of the higher ranks have been considered models of womanly beauty and cultivation, and there is no doubt that many of them possess the most amiable and excellent characteristics. An English daughter is devoted to her parents; an English sister loves her brothers with the fondest affection, and makes the greatest sacrifices for their happiness; an English wife, from love of home and its comforts, from inclination, and from duty, gives up her life to the happiness and welfare of her family. But nature is everywhere the same, and the passions, however they may be controlled, can not be suppressed; and though the code of English morals is very severe, though the woman who offends is proscribed and excommunicated, the records of English society are full of irregularities, occurring in every sphere of life.

On the continent of Europe affairs of gallantry make no disturbance in society; but in England, where the recognized standard of morals is higher, or at least more severe, the violations of the code make more scandal and disturbance. There may be few compared with the whole number of the people, but there are enough to furnish a perpetual feast for the censorious, and to occupy to a considerable extent the courts of law and the columns of the newspapers. Suits of damages for criminal conversation are of no rare occurrence in the higher walks of English life; and the instances of matrimonial unfaithfulness are far more common than one conversant with English notions of morality would be apt to imagine.

Where life is highly artificial, where marriages are mercenary, as they are to a great extent among the nobility and gentry, the passions will often break over the prescribed bonds of custom and religion, and some women of the highest rank and fashion have set scandal at defiance, and laughed at character. The courts of English monarchs have in several instances been very far from affording a proper example to the aristocracy. That of Charles the Second was filled with his mistresses, and the irregularities of George the Fourth did much to lower the tone of moral sentiment throughout every rank of society.

The women of England differ from those of France in the seriousness of their amours. With a French woman, a love affair is an amusement, a pastime. She enters into it with spirit, it is carried on with discretion, and it is, very likely, soon over. But with an English woman of character, the same kind of affair is a matter of life and death. She is fully absorbed in her passion, and ready to sacrifice everything to its enjoyment; and she demands of her lover the same absorption and the same abandonment. That which would

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be but a passing scandal at Paris, at London would be an elopement, a suit for breach of promise, and a divorce.

In the middle ranks of English society there is more purity of morals than among the high aristocracy, because there is more freedom for the affections, and less temptation. The English idea of comfort is a great conservator of morality. There is so much in having home, family, and society, that women prefer great sacrifices of their affections to losing what is so essential to their comfort.

Among the lower classes in England there exists a profligacy of morals which seems to be the growth of their desperate condition. Deprived of the enjoyments of wealth and the comforts of competence, sinking, year after year, into a poverty from which there seems to be no relief, these poor people abandon themselves, with desperation, to drunkenness and licentiousness. The conservative influences which surround the upper and middle classes are unfelt, and debauchery goes hand in hand with poverty and ignorance.

Still, the women of England, generally, are of a very lovely character. They are kind, gentle, and benevolent. They are never wearied in rendering good offices to their friends and to the unfortunate. Their expansive philanthropy finds subjects for its exercise all over the globe, and it is only to be feared that while they are trying to benefit the inhabitants of distant countries, they sometimes overlook the millions of poor wretches around them. Probably no country in the world has shown more examples of female virtue, magnanimity, and heroism.

The women of Ireland have a gayety, frankness, and cordiality of temper, that render them very charming. Though warm and passionate, they are constant and chaste; for the religious sentiment is a check upon their passions, and they generally marry young, and are little influenced by mercenary considerations. Young couples marry with little foresight or care for the future. They hold that two people eat no more when they are together than when they are separate, while there is in many respects a real economy, as of room, fire, and bedding.

The Scotch women are naturally proud and heroic, very patriotic, and attached to their ancient usages. The romances and songs of Scotland have made us familiar with all the beauties of their character.

The population of the United States combines in a remarkable degree the best characters of the English, Scotch, Irish, Dutch, and German races. In various portions of the country, one or another of these races predominates; but all have had one influence upon the

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formation of character. There is no country where the great mass of females are so well educated, where they are allowed such entire freedom, and where they are treated with such respectful consideration. As a general rule, girls mix freely in society before marriage, they have the best opportunities of becoming acquainted with the other sex, and it is seldom that any will but their own is consulted in their marriages. The consequence of this general freedom is as general a fidelity.

The exceptions to the general rule of chastity before marriage, and fidelity afterwards, are very rare, in the ratio of the whole population. In large cities there are influences which tend somewhat to the development of licentiousness; but even in these a vast majority of women are truly virtuous, while in all the qualities which adorn the female character the women of America have no superiors.

The freedom with which young girls mingle in society in this country, and the unconstrained manner in which they receive the visits of their admirers, have excited the amazement of foreigners; but it is highly creditable to the female character that all this freedom of unrestricted intercourse, instead of leading to any immorality, has only confirmed American women in the pride of self-relying virtue.

It is true that in some parts of the country this freedom has been, and probably still is, carried to an extraordinary degree. But a few years ago, in some parts of New England, in Pennsylvania, and perhaps in other sections, young people were not only left alone to do their courting, at night, but it was a custom for them to go to bed together; and this was done, and for aught we know may still be, not only without the idea of any impropriety, but without any violation of chastity. Fifty years ago this custom was universal in some of the most moral portions of New England, and we can not learn that they were any the less moral on that account; on the contrary, there is reason to believe that as our people have become more fastidious in appearances, they have not become more correct in their conduct. The existence and prevalence of this custom, with the fact that it was connected with an almost universal chastity, are the best proofs of the strength of that virtue in American women. There were, without doubt, many instances in which the marriage ceremony was delayed somewhat out of its proper order, as there still are; but these cases are comparatively rare, and when they do occur, there is little mischief done, and parties are comforted with the reflection that "all's well that ends well."

Throughout American society, the offences against morality, on the part of the female sex, are comparatively rare. In some of the

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States there are penal statutes for the protection of chastity, or the punishment of seduction and adultery. In some, the latter offence is punished as a felony; in other States, offenders are only liable to a civil action of damages. It is to be tested whether penal statutes can suppress the irregular manifestations of amativeness.

In a country where there is little difficulty in obtaining a respectable livelihood — where there are no wide distinctions of rank and position — where young people of both sexes associate freely together, and nearly every marriage is a love-match — there would seem to be few temptations to licentiousness; still, in every community more or less exists; and in our cities, though the proportion may not be much greater than in the country, the aggregate amount has a formidable appearance. It may be interesting to the moralist and the philosopher to find the reasons for the existence of this exceptional amount of immorality.

In all our large cities, and connected with the various departments of commerce, there is a large surplus population, of travellers for business and pleasure, seafaring men and adventurers, wifeless and homeless, whose passions seek their gratification in illicit amours, and in houses of prostitution. There are a certain number of women who have been reduced by poverty to the desperation of selling themselves; who have been abandoned by their husbands or by seducers, and who have thus been thrown into a life of promiscuous prostitution; and in this way is formed one kind of licentiousness.

With all the freedom of choice and opportunities for forming an acquaintance that exist in this country, there are yet a vast number of unfortunate marriages, in which, from various causes, the parties are disappointed in their anticipated happiness; and from the circumstance of custom, and, to a certain extent, the laws making these marriages indissoluble, there arise many illicit amours. From various bad habits and modes of life a great many women are of weak constitutions and imperfect organizations. The husbands of such women, while preserving outwardly the decorums of marriage, do not hesitate to find secretly more congenial partners. On the other hand, where women of passion, and of high character even, find themselves united to men of uncongenial natures, they in many instances do not hesitate to seek for compensations. We have spoken already of the effects of mercenary and otherwise ill-assorted marriages; and these, though not so frequent as in most countries, are far too common here; and this legalized prostitution and sanctified adultery is one of the horrors of our social state.

These causes produce, naturally and inevitably, a proportional amount of licentiousness; and the more secret these illicit amours

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are, the worse is their effect upon the general character — for it is the sense of wrong and degradation which produces the mischief, as it is this which makes the difference between the soldier and the assassin.

The influences in favor of virtue here are greater than in most other countries — the temptations to vice are less; and our society consequently has a high tone of morality; but to raise that tone still higher, we have only to increase the beneficial influences, and to diminish the inducements to immoral conduct.

The American women are courageous and patriotic, in an extraordinary degree, as has been manifested on a thousand occasions. Mixing freely in general society, and at an early age, they take a great interest in the business and politics of the country, and are often the leaders in religious and philanthropic, as well as social movements. In energy of character, in intelligence, and the religious and domestic virtues, the women of America have no superiors in the world; and in all these respects their character is still improving. The standard of private education and excellence rises higher and higher with the advance of society, and woman is destined to lead the van in the reforms which are to elevate the character and work out the noble destiny of the human race.

The general character of woman has been beautifully given by the traveler Ledyard, in the following passage, which is no more beautiful than just: —

"I have always remarked," said this careful observer of manners, "that women in all countries are civil, obliging, fender, and humane; that they are inclined to be gay and cheerful, timorous and modest; and that they do not hesitate, like men, to perform a generous action. Not haughty, not arrogant, nor supercilious, they are full of courtesy, and fond of society; more liable, in general, to err than man, but in general, also, more virtuous, and performing more good actions than he. To woman, whether civilized or savage, I never addressed myself in the language of decency and friendship, without receiving a decent and friendly answer. With man it has often been otherwise. In wandering through the barren plains of inhospitable Denmark, through honest Sweden and frozen Lapland, rude and churlish Finland, unprincipled Russia, and the wide-spread regions of the wandering Tartar, if hungry, dry, cold, wet, or sick, the women have ever been friendly to me, and uniformly so; and to add to this virtue (so worthy of the appellation of benevolence), their actions have been performed in so free and so kind a manner, that if I was dry, I drank the sweetest draught, and if hungry, I ate the coarsest morsel, with a double relish."

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CHAPTER XLI.

PLAIN TALKS ON IMPORTANT SUBJECTS.

To the Married and Single of Both Sexes.

Wishing to make this work full and explicit on all subjects upon which it treats, and to save much valuable time in replying to correspondents, I add this as an appendix to what has already been written on several similar subjects, but not exactly covering this ground. I wish to be understood that I assume no responsibility when I state the opinions of others, as indorsing them, unless I do so in express terms. Further, when I give facts or opinions on any subject, I must not be held responsible for inferences or deductions made by others. Thus the saying of the apostle refers to natural law and its social applications, "Many things are lawful, but all things are not expedient." I have written in frankness, and as I would to a confiding friend, and hope not to be misapprehended. I am a profound believer in the uses of knowledge, and do not believe there is a fact not worth knowing, or an opinion that is not worth examining. St. Paul says, "Prove (try or examine) all things; hold fast that which is good." This learned apostle would be the last to complain if this maxim were applied to his own writings. We shall consider here such matters as may be of interest, or possible use, arranged in the order named below.

"The First Affection," "Puberty in Male and Female," "The time Both Sexes are fitted for performance of the Sexual Functions," "What now is the Order of Nature," "Before Mourning over Waste consider the Elements of Life, etc.," "An Opinion," "When this Sentiment, in Male and Female, is Undeveloped," "The Effects," "Powerful Illustration," "The Nervous Power," "Nature," "The Passions of Love," "Investigating the Subject," "Many Animals," "The Human Species," "Examining Society — Creeds, Practices, etc.," "The Instinct of Reproduction," "Differences in Man and Woman," "The Influence of the Organ of Amativeness," "Does the Male or Female enjoy most the Ultimatum of Love," "Some Practical Observations," "The best Safeguard for Women," "Women Govern Themselves," "Foolish Notions of Young Husbands:

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the Purity of Brides, Virgins, Devices, Opinions of the most Noted Physicians, etc. — a most interesting and important paragraph," "Pleasures of Sexual Enjoyment," "Exciting Amativeness," "How to Determine the Sex of Children," "The Frequency of Sexual Pleasures," "Crimes against Nature and Law," "The Teachings of all Nature," "What is Woman to do," "Universal Modesty," "Prostitution," "Ungratified Sexual Pleasures," "Increased Population," "Beauty," "Happiness," "Birth," "Father and Mother," "Nature ever kind, etc.," "How to beget Male and Female Children at Pleasure," "Preventions of Pregnancy," "Loss of Sexual Desires, etc.," "Replies to Curious Questions," "Exposé of Love Powders, Elixirs, Love Perfumes, etc."

Organs of Generation. — The generative function has for its special use the continuation of the species; and it is intimately connected with the highest processes of both the systems of organic and animal life. There is no action of the body, and no power of the soul, which does not enter into the complicated and beautiful process by which humanity exists, and new beings are created. For the performance of this great function, we have a peculiar power or passion of the soul; a separate organ in the brain; nerves of exquisite sensation, voluntary and involuntary nerves of motion, with their muscular apparatus; and the most complex organs of innervation, circulation, nutrition, and secretion, connected with the system of organic life. Through all her works Nature has taken peculiar care of this function, often raised it above all others, and sacrificed all individual interests to the general welfare. In many animals, and in most plants, the double process is performed by the male and female organs in the same individual; but in the higher animals we have the two sets of organs necessary to the result in two animals, male and female. The sexes are distinct, and the possession of one or the other set of organs, and the capacity of performing one or the other of these processes of the generative function, make the striking differences between the male and the female.

I have described, heretofore, with some minuteness, the more obvious and external features of the two sets of generative organs. I have now to give a more thorough and physiological account of this function and its relations. It divides itself naturally into three parts:

The passional, or that connected with the soul, and having its nervous center in the cerebellum — the Amativeness of the phrenologists;

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The sensational, or active, connected with manifestation and the sexual congress;

The organic, or the evolution of germs and spermatozoa, in the ovaries and testicles, and the progressive evolution and final expulsion of the fetus.

We have, then, to consider the personal and social relations connected with this function. I trust that the reader sees that here is matter worthy of his or her attentive and most serious consideration. The order in which we treat of the three divisions of this subject may not be very important, but I prefer now to begin with the higher passional sphere, and descend through manifestations and results; though, as will be seen, in this, as in all the other functions of man, these are intermingled and reciprocally act on each other.

The passion of love in our earlier years has what may be called a rudimentary development. In very young children we perceive signs of the sexual instinct. It is naturally shown in a gallant fondness which little boys have for their mothers, their older sisters, and generally for the female sex. At the same time, little girls have a peculiar tenderness for their fathers and male friends.

The cerebellum, the seat of this passion, is usually small and immature in childhood, corresponding to the state of the feeling, and of its special organs; and it is not until the age of puberty that all the organs are developed together.

But as there is a rudimental activity in the passional sphere, there is also, in many cases, some excitement in the organic. The boy, before he reaches his teens, has his imagination excited with ideas of sexual pleasure; and his immature organs partake of this excitement. If, at this time, he is so unfortunate as to find the means of gratifying his propensity, he runs the risk of for ever disordering, or even destroying, his virile powers, and, in the act, of wrecking his whole mental and bodily constitution. With the young girl, the danger is equally imminent. Her passions are as strong, and her power of gratification even greater. If, in maturity, women seem to have the capacity for greater and more frequent enjoyment than men, in childhood a far greater number destroy all desire and all power of enjoyment.

There are some children, born of parents with disordered Amativeness, who inherit passional activities and organic excitabilities, which hurry them to swift destruction. Mere infants, both male and female, fall spontaneously into habits of self-pollution. This is not simply a vice; it is a disease. I do not say that all vices are not of the nature of disease; but this early propensity to the use, and

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consequent destruction of the sexual organs, is a special disease which demands earnest sympathy and prompt attention for its cure.

In a normal condition, there is considerable excitement of the passion of love on the approach of puberty. This period comes, in boys, at the age of fifteen to seventeen; in girls, from thirteen to fifteen; and later or earlier in exceptional cases. Boys and girls, as they approach this age, are full of romantic sentiment, which expresses itself in profound sighs, in a sweet melancholy, a love of solitude, and in idealizations of the adored rather than beloved object.

I am satisfied, from many observations, that the most natural love of a youth of fifteen is a mature woman of thirty or forty; and that the affections of a girl of a corresponding age are most likely to be bestowed upon some mature man. At a later period, men love women of their own ages; and still later they respond to the affections of those who are much younger than themselves. These are the wise harmonies of Nature; and we gain nothing by ignoring them, or opposing their influence. Such loves, at this period, are the most suitable that can be formed, and the least dangerous. Youthful ardor and impetuosity are tempered and guided by the wisdom of experience; but where two very young persons are thrown together, their passions burn out themselves, and leave but cinders of their possessors.

The First Affection, of either man or woman, is not *usually* lasting; and if any effort is made to compel it to constancy by the bonds of a legal marriage, it generally proves a disastrous experiment. Left to itself the illusion vanishes, or the love settles into a calm and beautiful friendship.

Puberty. — When the period of puberty has fully arrived, there comes a wonderful change over the whole being. No after change, till death itself comes, is so rapid and important. Soul and body expand with new powers and new feelings. The boy finds a beard sprouting on his chin, and hair also springing on the pubes. His neck increases in size by the expansion of the cerebellum behind and the larynx in front. With the expansion of the larynx, his voice sinks a full octave in depth. He finds his penis growing to what seems to him an extraordinary size. The testicles also increase. He has frequent erections; and his mind is filled with ideas of voluptuousness. His ideas of women are not so entirely romantic as before; still it is left for his dreams to give to him the full power of his senses. Fortunate is the youth whose love for some adorable woman chastens the ardor of these fancies, and prevents the waste of this new-found life!

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Puberty, in the girl, brings no less remarkable changes. There is no beard upon the face, but a luxuriant growth of hair begins to cover the mons veneris. The larynx does not expand, nor the voice deepen, but the cerebellum, though always smaller than in the male, increases in size, and the form expands into the full mold of womanly beauty. The whole pelvis enlarges, giving breadth to the hips, and a graceful swing to the carriage. The mammary glands enlarge, producing in all healthy developed girls the bosom of ravishing voluptuousness — the bosom which sculptors and painters are never tired of showing us, but which women commonly conceal, unless fashion compels the exposure. But the most striking change that takes place when the girl becomes a woman, is the commencement of a monthly discharge from the uterus, through the vagina, coincident with and dependent upon the ripening of the germs in the ovaries.

Both Sexes are now apparently fitted for the performance of the sexual function. In the male, the testicles have secreted the spermatic fluid, and elaborated its vital part, the living spermatozoa; the seminal vesicles are filled with this fluid, ready to be discharged. In the female, the ovaries have begun to bring forth the ova, which contain the germs, which only require the presence of the spermatic fluid, to be developed into perfect human beings.

What now is the order of nature at this period! Her work, in the reproductive function, is begun, and goes on, month after month, in the female, and continually in the male. Every month an egg is thrown off from the ovary, passes down the fallopian tube, lodges in the uterus, and if not fecundated, perishes, and is expelled as an abortion. At the same time Nature is forming, in the testicles of the male, millions of spermatic animalcules, any one of which would probably be sufficient to effect the fecundation of the extruded ovum.

Before we Mourn over this sad seeming waste of the elements of life, let us send through nature a glance of inquiry. How large a proportion of the early blossoms on our fruit-trees never ripen into fruit! How many millions of the seeds of plants become the food of animals, and never carry out their design of reproduction! Of the millions of eggs which come from a single fish, how few ever produce young, and if Nature were stingy in her productions, why should there be millions of spermatozoa in a single discharge of the spermatic fluid, when it is probable that only one can ever act upon the same ovum?

Puberty in woman begins at fifteen, and the monthly evolution

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of ova continues till fifty, when the function ceases. If she has but a single egg each month, she produces four hundred and twenty. But many women throw off two, and even three, four, or five at a monthly period. Twins are often fecundated. Thus, a woman who should pass through this period without fecundation, would produce and waste five hundred germs of human beings.

My Opinion is, that the early effects of the activity of the generative organs are intended for the perfection of the individual, and not for the continuation of the species. Love ripens and expands the soul, and its organic elements give breadth, firmness, and vigor to the bodily organs. Love diffuses through the mind warmth, enthusiasm, energy, the elements of genius, and gives an inexpressible charm to the feelings of the heart. All that is brave, noble, generous, heroic, and all that is sweet, voluptuous, tender, and endearing, spring from the influence of the sentiment of love.

When this Sentiment is undeveloped, when the cerebellum is small and inactive, and when the generative organs are lacking in energy, the whole character suffers. It is cold, heartless, selfish, unfeeling, and wanting in noble and generous impulses and enthusiasm. And whatever be the cause of this lack of development or activity, the effects are nearly the same, and afford the most convincing proofs of what we have stated to be the proper influence of this wonderful faculty. If the development of the cerebellum is checked by the removal of the testicles in the male, or the ovaries in the female, at an early age, we have the most striking results. In the male, the beard does not grow, nor the hair upon the pubes. The larynx does not expand, and the voice retains the high treble or contralto pitch of boyhood. The operation was formerly much employed in Italy for this purpose. The muscles remain soft, and there is a tendency to fatness and effeminacy in the whole aspect. The mental and moral character is of a corresponding emasculation. There is feebleness, coldness, selfishness, cowardice, and a general lack of all we convey by the word manhood.

Similar effects are produced by early habits of masturbation, or self-abuse, and also by early excesses in sexual indulgence.

The Effects of a similar check of development upon the female are equally remarkable, but, in some respects, the reverse of the above. Love, that makes men manly, makes women womanly. Where there is destruction of the ovaries, or arrest of development either of the ovaries or the cerebellum in girls, they grow large and coarse. The pelvis does not expand. The hair upon the pubes is thin and straggling; the bosom remains flat; a thin beard

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covers the chin — not the rich down that sometimes gives a more voluptuous softness to the female lip, but a scraggy, straggling, half masculine beard; the voice becomes rough and masculine, and the whole appearance is that of an ambiguous being, neither male nor female, but partaking of the nature of each. The character, also, is cold, repulsive, rude, selfish, and cruel; the reverse of the truly feminine nature.

In woman, as in man, similar effects are produced by any arrest of the development, or any exhaustion of the sentiment and organism of love; but excess, which exhausts the other powers, and disturbs the harmony of the system, may only produce great and diseased activity of Amativeness; when we have different effects from those which attend upon its destruction.

No more Powerful Illustration exists of the proper influence of the generative function over the animal and organic systems than those just given, and we have such illustrations, in a greater or less degree, all around us. No nature can be blessed with any quality so noble and ennobling as a healthy development of the principle of Love. No nature can be so cursed as by its destruction or deprivation. All that is great, and noble, and beautiful in human character, or capacity, or destiny, rests upon this basis. All that is base, and mean, and miserable, may find its source in the want, or disease, or perversion of this principle.

The Nervous Power that is generated in the cerebellum, in man, and which is expended in the production of zoosperms in the testes, if not exhausted in their expulsion and by their loss, seems to be thrown back into the system, and to strengthen every part. It is a fountain of life and energy; a vital force, which acts in every direction; a motive power, which infuses manhood into every organ of the brain and every fiber of the body. It is like the vital heat, that first warms the whole body, and then warms bodies around us, but which must not be exhausted.

Nature, under favorable conditions, has provided for this mode of action. Youth is the season of enterprise and action. The constitution is developed by hardy exercises, and the mind by studies. There is a restless and eager desire for knowledge and variety of occupations. And love is yet more romantic than passionate, more ideal than actual. It dwells in the imagination, and happily descends not into the senses. So the nervous power, generated in the cerebellum: the divine energy that reigns in the soul perfects the whole nature, and thus fits it for the mature accomplishment of its final object.

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And in woman, while the organic action of the ovaries goes on, in the production, ripening, and throwing off of germ, if there is no expenditure of nervous force in sexual pleasure, no fecundation of the ovum, and consequently no evolution of the fetus, her vital force is also expended in mental and physical development, and in fitting her for the functions of love and maternity, for which she is not well prepared until the accumulation and action of this force has brought to her a certain degree of maturity. The early germs in woman seem less fitted for fecundation than those which appear later; as if Nature did not quite succeed in her first efforts, but did better when she had gained strength by exercise, and skill by practice. In the same way, the zoosperms, which are produced by the male in the first years of puberty, appear to have less power in the production of a healthy offspring. And the worst result may be anticipated where the two are joined together. If the young girl is to have children at all, it should be by a strong, mature man; and if a youth is to engender, it ought to be with a vigorous woman; so that the strength of one may make up for the weakness of the other.

I give this opinion, based upon observations. It is what seems to me to be true of our race in its present condition of civilized discordance and disease. It may be that in a truer condition of existence a fuller development may exist at puberty, so that the procreative function may properly begin as soon as the organs are capable of consummating the sexual relation. This is possible; but it is my impression that in the most perfect condition, the law will be as I have given it; and that the first activity of the generative function will be expended in energizing the individual, rather than in the propagation of the species.

The Passion of Love, or the propensity of Amativeness, varies in the sexes, and in individuals of each sex. Everywhere in nature we find an infinite variety, constituting individualities; while we have everywhere similarities, never amounting to absolute identities. No two persons look alike; no two feel alike; nor, unless under compulsion, can they act alike. They may act in harmony; but harmony is not unison. Where we can find two persons in the world with the same form, features, and expression, the same development of faculties, in the same proportions and relations, we may expect them to feel and act alike, and be governed by the same rules.

In certain respects all men are alike; but their likeness is consistent with an infinite individuality. In certain respects the faculties and passions of different individuals are alike; but in others

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they very notably differ. How varied are the tastes and capacities connected with the organ of Tune! One person can only understand the simplest melody; others revel in complicated harmonies. Alimentiveness in one man tends to the desire of a single delicacy; another seems omnivorous. In Art, one is fond of figures, another of landscapes; one delights in the simple and severe, another loves the ornate and luxurious. Observe the various tastes in dress, when fashion does not compel everybody to follow a particular standard. In religion, in ambition, in pride, in friendship, in all faculties, sentiments, and passions, we have these varieties of individuality, necessary to the perfection of social harmony. Shall we deny to the great passion of love, and the great function of generation, the same individuality and the same variety?

God is still supreme, and we had much better study His laws than attempt to supplant them with stupid regulations of our own.

The passion of love has three general modes of expression.

It gives a feeling of regard for the whole opposite sex. It inspires in man a gallant respect for woman; in woman, a tender regard for man.

In a circumscribed sphere, it is social in its character and action. A man has for the women of his acquaintance, whom he meets in society, and with whom he is on terms of kindly familiarity, a very different feeling from any he entertains toward the other sex. Women and men, with no bond of personal love, still have a more cordial feeling toward each other than they commonly have toward persons of their own sex. This is seen in families, in society, and in schools where both sexes mix freely together. But under the customary repressions of fashion and opinion which now govern society, we find men and women driven into false and unnatural connections with those of their own sex; yet even here we see masculine natures attaching themselves to feminine, and everywhere the action of the great physical and moral law: unlike natures attract each other — like natures repel.

Personal love, beginning with a spiritual attraction, becoming voluptuous desire, and seeking its ultimate expression in sexual union. This is the last, fullest, and most perfect action of the amative passion; that which consummates the life and happiness of the individual, and governs the destiny of the race.

Let us honestly investigate the laws of this function in its full expression; let us try to understand its relations and harmonies, that we may also know its perversions and discordances.

While Investigating this Subject, let us

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see what is the actual expression of this passion in nature and in man; and endeavor to distinguish what is spontaneous, natural, or healthy, from the results of repression, subversion, and disease, of which, alas! the world is so full as to make our task one of almost insuperable difficulty.

In animals we have all varieties of sexual relations. Some are entirely promiscuous, any male fecundating any female who requires that process. Then we have the polygamic relations which exist among fowls, seals, and other gregarious animals, in which one male has a harem of several females, who are made his by his own attraction, or the right of the strongest. On the other hand, we see female animals, especially those who produce several young at a litter, receiving successively the embraces of several males. The queen bee, the only perfect female in the hive, has for her service two or three hundred gentlemanly drones, whose sole office is the fecundation of the eggs which are to produce her numerous offspring. On the other hand, one ram is sufficient for a large flock of sheep, one bull for a herd of cows, and one stallion for quite a number of mares.

Many Animals, however, are monogamic in their love relations. Birds copulate in pairs, and are capable of ardent and exclusive affections. Elephants are found both in pairs and in herds; monkeys pair, but are not exclusive in their amours. The wolves seek each other only once a year, and cohabit promiscuously. The only one of all the species of deer that is constant is the roebuck.

In the Human Species, the love relation exists in such variety as would seem to indicate, what many believe, that man includes in himself the nature of all the lower animals. In the early ages, and what are called the patriarchal times, polygamy seems to have been the unquestioned practice. It is now tolerated by law or custom over three fourths of the world, and practiced to a great extent over the other fourth.

Examine Society around us, and we find persons of varied creeds and practices. Strict monogamists, who believe in a single love, which endures through all time and all eternity. This belief does not admit of one love succeeding another, much less two at the same time. A second love is profanity, a second marriage adultery. Yet persons zealously avowing this belief are found engaging in a succession of amours. Their excuse is, that in each case they have been mistaken. The person supposed to be the true conjugal partner, the Heaven-appointed mate, proved not to be the

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right one. They have nothing to do but to go on trying, atoning for each successive adultery by their efforts to find a true relation.

Moderate monogamists, who allow of a succession of love relations, but do not admit of but one at a time. This is the ordinary view of legal marriage, in which the bond can only be dissolved by the death of one of the parties, or by such an outrage against the relation as is equivalent to death, such as adultery. Others are more liberal in their construction of this creed, and believe themselves to be true, if only true to the existing love, no matter how rapidly one may succeed to another.

There are those who believe in a central or pivotal love, transcending, and perhaps outlasting all others; but around which may revolve other loves, affections, or fancies, not inconsistent, but entirely harmonious with the prime and pivotal relation.

This closes the list of natural opinions and practices, and it will be seen that the last variety includes, in a certain way, and combines the other two. But I have no disposition to place a limit on the boundless infinitudes and ever varied individualities of nature.

When every man and woman feels free to adapt himself to his true social and passional relations, we shall see whether God has really made a blunder; whether the varieties, and alternations, and individualities of passional development will result in discord or in harmony. It is certainly my impression that God has made no mistake; and that no real good has resulted from all the efforts of men to set Him right.

The Instinct of Reproduction is above all mere sensual gratification. It is by no means certain that this act is always one of pleasure to animals, while, in our own species, the sexual congress is often to the woman either entirely indifferent or painful. Gestation is to many a long disease, and parturition a death agony. Still, the desire for offspring triumphs over all these terrible perversions.

In animals where there is but one gestation in a year, there is usually but one period of heat; but while the periods of gestation and lactation extend over nearly two years in the human female, when these are at an end, she regularly, every month, throws off an ovum, marked by the menstrual discharge; and, of course, is every month prepared to receive the sexual embrace. It seems to be fairly inferable, that once a month is the natural period in which a woman requires sexual union; and it may be doubted whether any greater frequency is not a violation of natural law. At this period, however, when in a healthy condition, she is full of ardor, and has a great

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capacity for enjoyment, and is seldom satisfied with a single sexual act. The period of excitement, moreover, may last for several days, or all the time the ovum is passing from the ovary to the uterus. Once there, it should not be disturbed by any passionate orgasms, whose tendency from that time forward is to produce abortion. It is the law of all nature; a law that is said never to be violated, even among savages, out of Christendom, that there should be no sexual union during gestation. It is not permitted among animals, and over three quarters of the world is looked upon as infamous in our own species. It is also inconsistent with the performance of the function of lactation. I do not wish to speak authoritatively in so delicate a matter. Let every man and woman look at the facts and decide.

Man Differs very materially from woman in the exercise of the procreative function. From the age of puberty, the action of the testes is uninterrupted. Whatever restraints he may have must be moral; for they are not physical, like woman's. And while, in woman, the production of ova ceases at from forty-five to fifty, the activity of the organs in man continues, and he is capable of generating until a late period of life, and in some cases when more than a century old. Man has no function corresponding in periodicity to menstruation; no diversions of the vital forces engaged in this function, like those of pregnancy and lactation.

These differences may involve grave questions of morals and social polity. In regard to woman, I give what I believe to be the fact and the law, because it is very important, and a violation of this law is attended with great evils. I give, also, what seem to be the facts in the nature of man; but I can not undertake to reconcile the teachings of nature with the laws of society. They are everywhere at variance, and all our miseries come out of these discords.

The Influence of the Organ OF AMATIVENESS stimulates the action of the secreting or sperm-preparing organs, the testicles. The presence of the seminal fluid in the seminal vesicles reacts upon the brain, and the mind glows with voluptuous ideas. Under their influence men are ever gallant, kind, attentive, and loving to women; ever seeking their favors; ever pressing their suit. It is the part of woman to accept or repulse; to grant or refuse.

The expressions of love antecedent to, and connected with its ultimatum, are varied and beautiful, involving the whole being. Love gives light and a trembling suffusion to the eye, a soft, tremulous tenderness to the voice, a sweet sadness to the demeanor, or

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a deep joyousness; a certain warmth and voluptuousness presides over the movements of the body; blushes come often to the cheeks, and the eyes are cast down with consciousness; the heart swells, and beats tumultuously; there is a radiant idealization of the beloved object, who seems clothed with every perfection; a new delight pervades the sense of feeling, which is, more than any other, the organ of this passion; every touch, even of the hem of the garment, is a deep pleasure; the hands clasp each other with a thrill of delight; the lips cling together in dewy kisses of inexpressible rapture; the bolder hands of man wander over the ravishing beauties of woman; he clasps her waist, he presses her soft bosom, and, in a tumult of delirious ecstasy, each finds the central point of attraction and of pleasure, which increases until it is completed in the sexual orgasm — the most exquisite enjoyment of which the human senses are capable. Such is HAPPY married life.

Does the Male or Female enjoy most the ultimatum of love? I have no doubt, that in a healthy condition, the pleasure of the female is longer continued, more frequently repeated, and more exquisite than that of the male; and that it is in this way that she is compensated for her long periods of deprivation; as she also is by the pleasures of maternity, of which man has little conception.

Some Practical Observations may be properly made here, connected with the physiology of the sexual congress, as given above. The organs of generation, in both sexes, are excited and stimulated by idleness, luxury, and every form of voluptuous beauty. Where it is desirable to avoid such excitement, all these must be guarded against. Passionate poetry and romances, warm pictures, dancing, especially the dancing of the stage, the fashionable display of female arms and bosoms, all fond toyings, and personal freedoms between the sexes, must be avoided by those with whom chastity is a necessity of age or circumstance. The lips are supplied with nerves of sensation from the cerebellum; and the kisses of the lips are sacred to love. The bosom is also supplied with nerves from the same source, and it is in the most direct and intimate sympathy with the female generative organs. A woman of sensibility, who would preserve her chastity, must guard her bosom well.

The best Safeguard against one passion is to arouse another, and, if possible, many others. Friendship is often a safeguard against love; even the friendship of young persons of opposite sexes. In the family, in schools, and in society, the more

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friendly familiarity exists the less likelihood is there of amative excitement and indulgence. Friendship comes so near to love, in its character, that it often takes its place, and is sometimes mistaken for it. Business, study, active exercises, amusement, ambition, reverence, a constant occupation of mind and body, divert the vital forces into so many channels, that the system feels no pressing wants in this direction, and men live in the bustle of active life for months, and even years, without amative wants.

Women Govern Themselves much more easily than men. With great numbers continence is no virtue, for they have not the least attraction for sexual connection, nor are they capable of sexual enjoyment. This is, indeed, a diseased condition, hereditary or acquired; but it is common to an incredible degree. But even with women of passionate natures, who are capable of the most ardent love and the fullest enjoyment, certain conditions are necessary to the awakening of sexual desire. They must love, and be beloved. Love must begin in the soul as a sentiment, come down into the heart as a passion, before it can descend into the body as a desire. Such a woman will be continent without the least difficulty so long as she does not love; but when she loves a man, she gives herself to him, soul and body. Happy the man who can inspire and respond to such a love! Happy the child born of such a union! Happy the human race when there shall be no others!

Foolish Notions — Virgins. — Young men are curious to know whether their wives are virgins, oftentimes resorting to many strange expedients to ascertain this fact. There are so many notions on this point that a few words of TRUTH and FACTS may not be amiss. Many a young husband has been sorely disappointed, and has wrongfully accused his bride of being impure, on not finding the evidence *sought for*, when in reality his bride has been as pure and chaste as the newly born babe. But, with his mind stored with foolish notions having no foundation of fact, he expects, like the savage African, that his bride will *show evidence* as described in a marriage of these barbarous people.

"Thus they are married; the bridegroom and bride retire: while the feast for friends is being prepared, one of the party standing by the door of the chamber receives from the bridegroom the sheet having the bloody tokens of the wife's virginity upon it, which is shown in triumph to all the guests, and great is their joy; but then, if there be no blood, the guests go sadly home without their dinners." While this custom is excusable in heathens, would it look well for those in civilization to require an unbroken hymen as evi-

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dence of virginity? Surely not; medical men know this test to be VERY UNCERTAIN, and that a thousand and one occurrences may have destroyed it. It is very often ruptured by accidents. Irritation near the labia may exist, which, if rubbed, the hymen may be destroyed. It is also often destroyed by surgical operations during childhood; coughing, sneezing, straining, and over-exertions of any kind, often destroy it. In fact, this *barbarous test* is NO TEST AT ALL, and often subjects those who accidentally have the hymen broken, to unjust, and most foul accusations. Many little girls from six to seven years of age, when under medical examinations, have been found wanting in this respect, but in each case it has been satisfactorily accounted for. Severe sickness, extreme debility, eruptions of an irritating nature, and the general list of complaints which are peculiar to females alone, may and do cause, in the *majority* of cases, the absence of the hymen. Therefore this should *never* be regarded as evidence of virginity. Besides the mortification of a broken hymen only falls on those who are MOST INNOCENT and such as are LEAST acquainted with the vices of this world. The courtesan, mistress, or respectable (?) young women who have tasted of the forbidden fruits of knowledge, know how to deceive and "pull the wool" over the eyes of all *knowing* and virtuous (?) young husbands. There are inventions gotten up for this special purpose, and so well do they effect their object that the most experienced Physician *may* be deceived, unless he requires the bride to submit to an indecent examination? Generally those ladies (?) who submit to carnal connection with man are knowing enough to possess themselves of all devices, while those only who have been innocent of such actions enter marriage so unsophisticated as to not provide themselves with these "little evidences." (?)

The celebrated and learned Pantacost says "this evidence is no evidence at all, and the idea has long since been repudiated. In some instances the hymen does not give way in the first or subsequent connections. Pregnancy has occurred in such cases by the spermatozoa of the male working through the opening of the hymen, passing up through the vagina, uretus, and into the fallopian tubes. Writers, therefore, no longer require this as a proof of chastity; nor is its absence a proof of immorality. Drs. Wilson, Parsons, Brownlow, Dunglison, and many other noted writers, indorse the above as forming facts from their actual experience. It is difficult to estimate how much the hymen may have to do in protecting the procreative organs during childhood from exposure and disease. It is known that young girls who have lost this protecting mem-

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brane are more liable to uterine diseases. The age of puberty, denoted by the appearance of the menses, is one in which the hymen may be dispensed with entirely; for whether by accident or marriage, in ten days or ten years after the appearance of the menses, it is a fact that the reproductive organs have fully matured, and that the hymen has fully performed its allotted duty for which it was made. It sometimes happens that the hymen becomes so cartilaginous by age, that connection can not be had until a surgeon has, with the knife, removed the obstruction; but if the female be careful, and keep the parts clean, and her mind and body pure, such obstructions will seldom or never occur.

Pleasures of Sexual Enjoyment.—The Perfectionists, a religious sect in this and the adjoining States, affirm that they have the power to control the sexual orgasm, so as to enjoy a certain degree of amative pleasure without emission or a full orgasm. It is possible that men with strong wills and moderate amativeness may obtain this control. I know, certainly, that women have this power. Courtesans submit, mechanically, to mercenary pollutions, taking no part in them, while they enjoy, with the keenest zest, the embraces of their lovers. So wives, who do not love their husbands, save all their amative feelings for their paramours. In the same way, women in pregnancy, and during the period of nursing, carefully permit the intercourse of their husbands, whom they love, but do not allow themselves to be excited, using the restraint of a strong will. There are thousands of women, however, who never experience the ecstasy of a sexual orgasm. There are others in whom it can only be excited with great difficulty, and by various artifices. The more spontaneous the feeling, the less exhausting; the more difficult to excite, the more it tasks the vital energies. Men are naturally desirous that their partners should experience pleasure, as it adds to their own. To effect this, they resort to manipulations of the clitoris with their fingers, etc., and to various novel, and, to a certain extent, unnatural methods and positions. Out of these grow terrible mischiefs, especially to women. Many of the worst cases of ovarian and uterine disease are caused by the forced pleasures of artificial excitement.

Exciting Amativeness.—"Oysters and eggs," says Byron, "are amatory food." This is true, also, of fish, flesh, and fowl. It is also true of many vegetable substances. Salt and phosphorus in food are excitants. Pepper, spices, and all stimulating condiments provoke to venery. Coffee stimulates the nervous system, and the stimulation is apt to take this direction. Wine and

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ardent spirits, in small quantities, do the same; but taken to excess, they produce the opposite effect. A full diet provokes to lust, so does idleness of mind or body. The vital force must act in some direction; and if we would not have it expended on alimentiveness and amativeness, we must direct it to other and nobler uses.

How to Determine the Sex OF CHILDREN.— Such observations as I have been able to make, induces me to think that the sex of a child is determined by the relative vigor of the parents. The father, from maturity, force of will, or superior strength of the procreative function, may give the masculine development; or the mother, from similar causes, may give the feminine. Where men of mature age cohabit with women much younger, there is an excess of males; but in countries where the customs of polygamy prevail, and a man's vital force is expended on several women, there will be more daughters than sons born to him; so that polygamy perpetuates itself. Where monogamic relations prevail, the sexes are born in nearly equal numbers.

The Frequency of Sexual Pleasures.— I have given what I believe to be the natural law of the generative function; but we are so far from a natural condition, that I scarcely expect any one to follow it. Thousands of men so "run to seed" as to insist upon having sexual intercourse daily, and in some cases several times a day. I have known men who indulged morning, noon, and night. But I have also known men to murder, in this way, three or four wives in rapid succession; and the world is full of victims of this inordinate lust. It is, however, but fair to say, that the victims are not all of one sex. Many a pale, thin, weak-backed man is suffering from gratifying the morbid desires of a strong, passionate, diseased woman. When women are diseased in this way, they go further than is possible with men. A man is usually limited by the amount of semen his testicles can secrete. In some the emission does not seem to be full, and is often repeated. With a full emission, a man, unless greatly excited, can not be prepared for another under an hour, and two or three are the extent of his powers. There are exceptions to this. I have known a man to have nine orgasms of a night; but a woman, who loses no semen, and simply expends a certain amount of nervous force, will have six or seven orgasms in rapid succession, each seeming to be more violent and ecstatic than the last. These may be accompanied with screams, bitings, spasms, and end in a faint languor that will last for many hours.

It is my opinion that no one, male or female, ought to average

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more than once a week, and then only when both are mutually inclined. If twelve days after the menstrual period this amount of indulgence was had, and for the rest of the month refrained from, it would be nearer to a natural condition.

Crimes against Nature and Law. — Among the crimes punished with death under the Mosaic law were bestiality, sodomy, and incest. All are more or less unnatural, but I see no good reason for continuing the penalty, or for making them in any way the subjects of human retribution. Under the Mosaic dispensation there were fourteen offenses punished with death. Many of these are not now reckoned offenses, and for most of the others the punishment is modified. I see no reason for punishing a man for an act which begins and ends with himself, or with a consenting party. Moreover, such laws are useless, as not one case in a thousand, from its very nature, can ever be brought to justice.

Amativeness, excited by false modes of living, and made rampant by social repressions, runs into many morbid expressions. Of these, masturbation, or self-pollution, is the most common and the most destructive. It prevails to about an equal extent in both sexes, and probably not more than one person in ten, of either sex, entirely escapes it. Many of the noblest, loveliest, and purest are wrecked by this habit, the result of parental sensuality and unnatural modes of life.

Sodomy, or the intercourse of one male with another, has been practiced from the remotest ages, and is still so common in Eastern and tropical countries as not to excite remark. It is also practiced among prisoners, soldiers, and sailors, all of whom are subject to false conditions. It also occurs from the mere choice of a morbid lust with men who have every opportunity for gratification with the other sex. This was so common in classic times, that Voltaire has thought it necessary to defend Solon, Plutarch, and even Socrates, from the charge of having recommended or defended it. It is even called Socratic love, as a similar passion of females for each other, and their mutual gratification of each other's desires, is called Sapphic love, from Sappho.

Bestiality, or sexual intercourse with the lower animals, is also practiced, from the same causes, by both sexes. This is also a crime in law, but I should think the act was punishment enough. If not, exposure and the attending disgrace would be. The world is full of stories of the production of monsters, part men and part animals, by this means; but when we remember how few animals of different species engender with each other, we shall not be surprised

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that we have no well-authenticated cases. The *lusus naturæ* found in our museums may be accounted for by other causes. There is no reason to suppose the spermatic animalcule of a man can fecundate a bitch, or sheep, or swine, nor *vice versa;* but it is extremely probable that a man might engender with some of the larger species of the orang-outang.

Incest, or sexual intercourse between near relations, is a very different matter. Nature, in making it repulsive, provides for the healthy procreation of the race, which demands, to a certain extent, the commingling of opposite qualities. Physiological incest is the sexual union of persons who are too nearly alike. In this way two strangers may be nearer related, in fact, than some brothers and sisters. Incestuous unions, from being false in themselves, produce weak, scrofulous, insane, or idiotic offspring. No incest can ever occur from a healthy attraction; it is like the other unnatural practices of which we have spoken.

If we accept the account of the human race having sprung from a single pair, there was a necessity for incest between brothers and sisters of the second, and cousins, uncles, and neices, or nephews and aunts in the succeeding. Even Abraham, the chosen of God, from whom the Hebrew nation was descended, had his half-sister for his wife.

The Teachings of all Nature are, that no woman should have sexual intercourse during pregnancy, and as once before remarked, is said never to be violated even among savages. Animals permit no such indulgences during gestation.

What is Woman to Do?—A loving, kind, jealous woman, who would not for the world have her husband satisfy his wants elsewhere, what is she to do? I have given what I believe to be the law; but sometimes all we have left us is a choice of evils. If a man can be very moderate, tender, and careful of his wife, and she can restrain herself so as not to join in the sexual orgasm, there can be, I think, no great amount of mischief, and less than might come from the sense of neglect or jealousy.

Universal Modesty.—Is there any foundation in nature for the sense of modesty? Those who look at the differences that exist in different countries, in this respect, might doubt it. It is true that the people of all nations, with a few exceptions, conceal the organs of generation; but even this rule is not universal. In the South Sea Islands clothing is more ornamental than useful. There is no evidence of the existence of the feeling of shame. In most tropical countries children are left to run about

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entirely naked, and adults are often nearly or quite so. In Central America men and women bathe together without dresses. In some parts of the world the legs are carefully concealed, in others the bosom. Even in our society there is no consistency in this respect. A delicate lady, who would blush to show her leg to the knee, thinks nothing of baring her arm to the shoulder, or, perhaps, of showing half her bosom, when low-necked dresses are the fashion. An Egyptian woman would show her whole body naked rather than her face; while our fastidious ladies cover the entire person, with the exception of some six inches square, which, in many cases, is not the most attractive portion of their bodies; for many a woman with an ugly face has a beautiful figure. Modesty, to these, is a great injustice.

Another curious inconsistency is the distinction made between nature and art. The same lady who goes with gentlemen to see a perfectly nude statue or picture, would be shocked at the idea of seeing a living form under the same circumstances. Most of these feelings appear to be the result of education. I doubt if any child would ever suspect that the human figure, as God created it in His own image, was a *nasty* object, if it were not carefully taught him. I see no *good* reason why we should not enjoy the beauty of living forms as well as the works of the painter and sculptor. If mischief is to come from the contemplation of beauty, then it must be concealed; but this, I suspect, is the result of diseased conditions. When we are worthy of Paradise we shall enjoy it.

Prostitution.—No essay on the function of generation can be complete if it leaves out of view prostitution. It has existed from the earliest periods of which we have any account, and in all countries which have made any advances in civilization. Why should there be set apart everywhere a class of women for public and promiscuous use? The fact is apparent; and all the efforts of moralists and legislators, for thousands of years, have never altered it. It is as much an institution of society and civilization as marriage, or prisons, or poverty. In all Christian countries, especially, every city, every large town, and almost every village, has its prostitutes. In London and Paris they are reckoned by tens of thousands. There are several thousands in New York. In Paris they are protected and regulated; in London, tolerated and persecuted: and in London they are consequently far worse in character and condition.

Prostitutes among women correspond to a large class of men of roving lives and sensual natures. Their support comes from sailors, soldiers, strangers, amative youths, and ill-matched husbands.

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A social demand exists, and they supply it; and in numbers, character, and in all respects the supply is governed by the demand. The supply can never be stopped until the demand has ceased.

The common prostitute is, in some respects, worse off than the victim of marriage. She earns her living by the prostitution of her body, as the other does, but without legal sanction and respectability. As a compensation for the want of these, she has more freedom; and though she may be compelled to submit to the embraces of some man, she has, to a certain extent, the power to refuse those who are especially repulsive to her. She is liable to venereal diseases, but these are not much worse than falling of the womb, whites, and involuntary pregnancies and childbirths. Besides, wives do not always escape gonorrhea and syphilis. Married women take comfort in their children; and prostitutes have lovers, and often children also, of whom they take the tenderest care.

The prostitutes of New York are of all classes, from the lowest and coarsest, to the most refined and beautiful. They correspond to every rank in society. Besides the public class, there has come to be a very large class of private courtesans. They consist of many young women who make a pretense of following various elegant trades, arts, or professions, and of the fashionable wives of men with small incomes.

I am well satisfied, from long observation, that all efforts to prevent prostitution are utterly unavailing and useless. It belongs to the present constitution of society, and is one of the necessary conditions of our present civilization. It can not be removed until the whole social system is changed. All any philanthropist can hope to do is to improve, as far as possible, the institution and the condition of its victims. Bad as this condition is, many a married woman is worse off than the average of prostitutes.

Ungratified Sexual Pleasures.—There are some grave questions connected with the continuance of the desire for and pleasure in sexual intercourse which we may discuss, but perhaps shall not be able to determine.

Many persons believe that the sole object and only justifiable motive to sexual indulgence is the begetting of children, and that the act is sinful under all other circumstances. There are many difficulties attending this theory. The passion of love and its sentimental enjoyments, the influence it has upon the character, the strength of the attraction for sexual union, and the exquisite and delicious pleasure it brings, in a healthy state, to both sexes, all point to other uses and ends than those of procreation. If this were the only use

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of sexual connection, why should the passionate desire for, and complete enjoyment of it continue, when the generative power has ceased? A woman ceases to be capable of bearing children at forty-five to fifty-five. There comes then what is called "the turn of life." The ovaries cease to produce germs — there is no longer any appearance of the menses; but the power to love remains in its full force and ardor, and the desire and capacity for sexual pleasure. Women sometimes continue beautiful, attractive, and exceedingly amorous until they are seventy. They make conquests, and enjoy them; and the strongest and most healthy women have this capacity for enjoyment. "Nothing is made in vain." It is for something that women have this power. It is folly to say that the exercise of such a faculty, and the enjoyment of such a pleasure, is a sin. Men retain the same desires and the same powers, with the added power of fecundation.

It seems clear that woman has control of the generative function. If women could go on producing offspring till old age, the result would be a puny race. The generative power, all that concerns the race, therefore, disappears as she passes the period of maturity. But love and its delights remain for the individual. The woman who has borne children through the menstruating period, has now a compensation in the full pleasures of love, without its privations or cares; and if her lover be either too old or too young to beget healthy offspring, he may still love without doing an injury to the race. Nature has been very bountiful in the distribution of the sources of happiness; it is man alone that is niggard and perverse.

Increased Population. — Writers on political economy assume that the legitimate checks to an overcrowding of population, which would take place if our race went on increasing, are poverty, famine, war, pestilence, and other social scourges. This view of God's wisdom is as false as it is terrible. The fact is, that all these causes make men more prolific. There are never so many children born as immediately after a desolating war or pestilence. The point at which men engender fastest is near the point of starvation, and in a low condition of intellectual development.

On the other hand, wealth, luxury, and refinement diminish population in families and nations. This is according to the law, that nature everywhere sacrifices the individual to the species; and the less development of the individual, the more rapid the increase. All observation confirms this law. Cultivation, then, is the only real check to surplus population. The finer the quality of fruit, the more scarce. While a poor and ignorant couple will be surrounded

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by a dozen children, their rich and refined neighbors will have but one or two. Only sons and only daughters are common in distinguished families, but rare enough among the poor.

Beauty is the first sign of health. Health gives development, and harmonious development is beauty. Every vegetable and every animal is beautiful, according to its own type of beauty, when it is most perfectly developed. And in man or woman the exact development of every part, and that which enables it to best perform its function, is the highest possible beauty. The handsomest possible head is the one which has the most perfect phrenological developments. The most beautiful eye, ear, or nose are those best adapted to seeing, hearing, and smelling. The loveliest mouth is that composed of the best shaped lips and most perfect teeth. The most delicious bosom is the one best fitted for its natural office. The finest limbs are those with the best muscular development. In a word, there is no part of the human figure where the best condition for use is not at the same time the condition of the highest beauty, and both together are synonymous with health. Consequently every deformity, every ugliness, every departure from the standard of the highest beauty of its kind, is a consequence and symptom of disease.

O ye who love beauty, and who desire it for yourselves, for your offspring, and for the race, learn that the single way to attain it is by the practice of the laws of health. Be good, and you shall be beautiful as well as happy. Let no man who has a love for nature and a reverence for God undervalue beauty, for there is no quality more divine. I know of no more palpable blasphemy than this unnatural pretense of despising beauty. It is to be sought, admired, loved, and worshiped.

Happiness is a sign of health, and a full enjoyment of life can not exist without it. A condition of happiness is said to be "a sound mind in a sound body." This is a simple description of a healthy condition. Happiness is the end or final cause of all sentient life. There is no other conceivable reason for the creation of any being. Happiness is, therefore, the positive and necessary result of every true life, as misery is the inevitable, because equally necessary, result of a false life. As health is the condition of a true life, the result and sign of health is happiness.

Hence all unhappiness of every kind, all pain, grief, regret, jealousy, discontent, anxiety, is the result of disease, bodily or mental, in ourselves or others. Sorrow seems to me just as much the effect of a disease as pain. One is the outcry of a sick organism, the

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other of a wounded spirit. We feel sorrow by sympathy with others; and there are many persons of sensitive organizations who feel bodily pain in the same way. The way to be happy is to be healthy; and when health is universal, there is no conceivable reason why there should be any unhappiness. There is no happiness without a corresponding degree of health, and no health without a corresponding degree of happiness.

Birth. — The first condition of health to every organized being is to be well begotten. The farmer who wishes good crops, selects his seed with care. He provides a good ram for his sheep, a good bull for his cows, a good stallion for his mares. He does not expect large, clean, sound wheat from small, smutty, shriveled seed; healthy lambs from diseased sheep and rams; good cows and strong oxen from a poor, diminutive breed; nor a beautiful, fleet horse from an inferior stock. Man is also an animal, and subject to all the laws of hereditary descent which govern the propagation of other animals.

Diseased parents beget diseased children, and the reverse. Long-lived parents beget long-lived children, and *vice versa*. There are causes which operate upon the individual in both cases to modify the effects of hereditary predisposition, but there remains no doubt of the force of that predisposition. A man gifted with a good constitution from his ancestry may destroy the principles of longevity in his offspring, though he may live to a good age himself. So, on the other hand, a man may transmit to his children a vigorous life-principle, which he may afterward undermine in himself, by his own bad habits. He may die early in spite of a good constitution, while his children, inheriting his healthy organization, may be more fortunate in preserving it. These rules apply to both parents.

To be well begotten, one's parents must not only be of a good stock, and have inherited and developed a good organization, but they must be actually living healthy lives, and observing all the conditions of health. Any unhealthy condition of the father affects the seminal fluid. For this to be pure, and strong, and vital, the blood and the nervous power must be in the same condition; and so of the germs prepared by the mother. No unhappy man, no diseased man, no man whose nervous power is exhausted by labor or care, no man who poisons his blood and disorders his nerves with stimulants and drugs, can possibly beget a healthy child. Every zoosperm prepared in the testes for the fecundation of the ovum is affected by every cause that affects the parent. There is no condition of body or mind with which the germ of life may not be affected

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by either of the parents. The seeds of all follies, vices, and crimes are sown in the uterus. The Bible truly says of men, that they had certain characters "from the mother's womb." Moral character, intellectual powers and tendencies, physical organization, health or disease, happiness or misery, are impressed upon the infinitesimal germ and the inconceivably minute zoosperm. The microscopic animalcule, shaped like an elongated tadpole, is, in reality, a blackguard, a liar, a thief, a scoundrel; or it is scrofulous, or syphilitic, or gouty; or it is idiotic or insane: all these, if formed by a parent of whom these are actual qualities. And so it is of a germ prepared in the ovary of the mother. So the sins of parents are visited on their children to the third and fourth generation, and, where the causes continue, to the thirtieth and fortieth.

Father and Mother, therefore, at the time of begetting, must be in all pure, and natural, and healthy conditions. If the parents love each other, the child will love its parents. But if a woman submits to be impregnated by a man whom she loathes and hates, that loathing and hatred will be impressed upon the child. It will show it in infancy, and it often lasts through life. We have an account of a man who had never been able, from his birth, to look at his father, from the impression made upon him by the mother previous to or during pregnancy. For these reasons, if for no others, SEXUAL COMMERCE SHOULD NEVER TAKE PLACE BUT IN A MOST LOVING UNION OF CONGENIAL SOULS. Two persons may have sworn eternal love upon a "stack of Bibles," but if they do not love, they have no right to have children. Sexual union should never take place in sickness, or depression, or fatigue, nor under the influence of stimulants. An idiot was the product of sexual union during a drunken frolic. The world is full of miserable wretches, the results of sexual commerce forced upon a loathing wife by a drunken husband. Yet this is marriage! the sacred institution! the basis of society! *Society is worthy of its basis.* There *is* a marriage, true, sacred, holy; but a vast number of so-called marriages are false and infernal. I believe that "whom God hath joined together, let not man put asunder;" but I have no belief in keeping those together whom God hath put asunder; and wherever a mistake of this kind has been made, the good of the individuals, and of the race, demands that it be corrected. If people who marry hastily must be punished, let it be in some way that will not affect their innocent offspring and remote posterity, as well as the whole social body to which they belong. If one suffers, all suffer. The true marriage is not a trap in which people are caught, nor a Bastile in which they are confined.

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And from this primary condition of health, with all that belongs to health, comes the law, that every woman, by her supreme right to herself, has the right to choose when she will have a husband or a child. She is to carry it, to bear it, to nurse it, to educate it; she is responsible to her child for its paternity and its development; and this responsibility carries with it the right of choice in all that affects it. O woman! you must accept this responsibility, and you must demand and have these rights. When men are once enlightened on this subject, none but inhuman wretches and monsters will deny them. You talk of the evils of slavery, and of the submission of female slaves to their masters' lusts. Look at the slavery of women over the civilized world, and their submission to the lusts of *their* masters! The first case is exceptional and rare — the last is general and almost universal.

Nature is Ever Kind, and neglects nothing that can benefit her creatures. She exerts her power to preserve the race, even from these evils. The healing power of nature, which tends constantly to growth and healthy development, which heals our wounds and cures our diseases when we give it a chance, and it is possible to do so, — this power operates ever to purify, strengthen, and elevate. It often does much to save the child from the diseases of the parent, and children are many times better than we could expect. With all things in nature working together for good, we must not despair, but try to improve by culture and education. With good conditions, and surrounded by good influences, I have seen the faults and diseases of birth gradually eradicated and cured, until scarcely a sign of them remained; and children, born ugly, diseased, and with unfortunate mental and moral tendencies, have come to be more beautiful, healthy, and good than seemed possible in their infancy.

To Beget Male and Female Children AT PLEASURE. — Sixt, Bismark, Von Bulson, Churler, and many other standard and noted authors, tell us we must lie on the right side immediately previous to coition, and raising for a time the right knee, a strong tension of the muscle is produced, which draws up the right testicle, thus placing it in position to act. A little attention, by keeping down one and pushing the other up with the hand during coition, aids in the certainty of the matter.

The experiments made with animals to prove this theory are said to have been successful in every instance. Whenever the left testicle was removed the animal would only beget males; and when the right one, only females. This process is practiced as a great se-

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cret by some stock-raisers who desire to increase their numbers of either sex to the exclusion of the other.

The same result is attained by extracting one or the other ovary from the female.

The idea of the secretion of the testicles being different is by no means original. Hippocrates and others taught the same doctrine. These authorities simply proved by experiment how the law can be applied practically and with certainty.

Preventions of Pregnancy. — I am often asked as to "my opinion" of this or that means offered to the public as a sure prevention to conception. In reply, many years of experience has convinced me that one of the most alarming causes of many of the female complaints now so prevalent in this country with the married can be traced to the use of these quack inventions, injurious and unreliable recipes, and the many various means resorted to in order to avoid child-bearing. The health of ladies using many of these things has been more injured than would have actually occurred had they given birth to a child every fifteen months. The use of these not only injures the female, but in a corresponding manner the male.

The many poisons put up in shape of pills, for prevention, weaken the muscular organization of the womb, and soon produce permanent barrenness, followed by the various forms of female diseases. When the healthy and necessary fluids are excluded from the internal membranes of the female, the male, at each connection, becomes inoculated with the virus, by which the tone and powers of his generative organization are much impaired, and often absolutely destroyed. Thousands by sad experience will testify to the truthfulness of this statement. The use of poisonous washes as injections produce the same results. The more extensive practice of "withdrawing" before emission occurs is worse still than either of the above modes. It is *unnatural* — bringing the pleasures up to the highest point, and leaving nature to satisfy the feelings, independent of the *individual*, of the *chemical*, and of the *frictional electricity*, all which in a natural and healthy connection are brought into full action, and it is these which produce the exquisite pleasures and extreme gratifications which those who, in natural and suitable connections, so much enjoy. Indeed, this practice is but little better than self-abuse; it eats and undermines the health slowly but surely, of both male and female, as must be readily seen by all who will but for a moment consider the matter in all its bearings.

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That a reliable, safe, and harmless preventive in possession of the married must promote both health and happiness none can doubt, and is a subject which all medical writers fully agree upon. Sir James Clark writes, "Many painful diseases females are subjected to, and which can not be remedied so long as they conceive, and which, if not cured, become fatal, are inherited by their children. Many again have a 'deformed pelvis,' and can not have living children, and are certain to die if the child becomes full size." It is well known by all physicians that those laboring under the last-named complaints, or are otherwise prevented from being safely delivered at the proper time, have *abortions* produced. This is to save the mother at the expense of the fetus: otherwise both must die. May it not be well asked if it is not better to *prevent* conception in a natural and healthy manner than to practice such butchery? and the conclusion we must all come to is, that the *want* of a reliable, simple, and healthy means of prevention is all which is required to do away entirely with this horrid practice. Every female who has an abortion produced upon her does so at the risk of her life; and if she escape with this, in ninety-nine cases in a hundred her health is shattered permanently. All physicians of respectability agree that there are no *safe* means of *abortion*, and that under the most favorable circumstances great risks are run, as but fifteen safe abortions (with shattered health) are made out of each one hundred cases. We do not expect that making this fact generally known will do away with it altogether, for in many cases it is the choice between abortion and prevention, and until a safe and reliable prevention is more generally known, we can expect but little reform.

Many will say that "total abstinence" is a sure prevention; but it is out of the question to expect that people will, or in fact can, practice such abstinences without the most fearful consequences. Nature must be indulged, and not to so indulge would encourage an illicit intercourse, bad habits, self-abuse, and a total disregard for the marriage vow, besides many other evils not necessary to mention.

Matrimony is a holy and God-appointed institution. "Increase and multiply" is one of the strictest injunctions of the "inspired volume," and also of the imperious voice of nature. But it does not follow that this instinct is to be abused as it now is in every part of the world. I say it does not follow that this world must be filled with pauperism, prisoners, prostitutes, criminals, soldiers, etc., to kill each other, and to lay waste the fairest flowers of God's crea-

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tion, at the bidding of tyrants, instead of beautifying and adorning it, as they ought to do. I say the sexual instinct ought not, as now it does, to afflict such sore and grievous curses upon mankind. All will agree with me in this.

There should be in every one's surroundings that which would make happy mothers, fathers, and children. A sickly, debilitated, and weakly woman does not wish to bring puny children into this world to inherit all the miseries which she suffers. A man suffering with constitutional weaknesses, or diseases of any kind, does not wish to entail on his offspring these same characteristics. Those of us who are compelled to labor for a bare sustenance, incessantly from morn till night, without even the hopes of being better off, surely can not wish to increase our misery and be guilty of cruelty to these poor little innocents, as we would, should we under such circumstances bring them into this world. Then how necessary is it that a safe, sure, healthy, and reliable means of prevention should be known and used by all whose health, means, or circumstances are such as not to warrant, either any children at all, or an additional increase to what they may already possess, or to so regulate the differences in the birth of children as would give the mother an opportunity to regain her lost vitality, and to place in her power that with which she might "elect" when she was best conditioned to again become a mother.

In concluding this subject, I will state, there are safe, sure, harmless, and reliable preventions, which do no injury, and prevent, to a certainty, all possibility of pregnancy so long as used; and should at any time an increase of family be desired, the use of these have only to be discontinued to obtain the object sought for. All who are interested in this subject will find full and reliable means mentioned, with particulars, under appropriate headings, and in last part of this book.

Loss of Sexual Desires.—Nothing produces more unhappiness than the loss, or want of sexual pleasures, and nothing so frequently causes infidelity as the lack of this, by either husband or wife. It arises entirely from unsuitable marriages, or from disease, mental or physical. When both parties are suitably matched, and in a perfect state of health, no such complaints as the above exist. This, with impotence, or the lack of the natural powers to enjoy the marital rights, has destroyed more domestic happiness than most other causes combined. It causes the unmarried to shun the society of the opposite sex; to despise each other, or rather, to despise themselves. And in married life it is

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the source of unnumbered evils — so many and varied, indeed, that volumes of books would be required to give a detailed history of them. No person who is not so lost to the tender and invigorating ties of life — the natural affections properly existing between father, mother, brother, sister, son, daughter, husband, wife, and so on throughout the collateral relations of humanity — can remain a moment indifferent to this fearful subject, for it can be shown that all these are weakened and finally obliterated, or nearly so, by constitutional inheritances, or genital impotence, especially that beginning with youth in both sexes. I refer to self-abuse, indiscretions, etc. Our sexual inclinations should be gratified the same as our cravings for food, and he or she who claims more virtue or refinement because of no desire for it, can not be looked upon in any light but a natural fool, or one who is so lost to all understanding that it would be waste of time to argue with. This class of people are rarely met with, or rather do not present themselves to an experienced physician as often as those with more natural and sensible views. Many of the most distinguished and highly educated ladies and gentlemen in all parts of the country, wanting in this particular, consult me, either personally or by letter, for restoration, that they may become what God intended them to be — loving, happy, and contented wives and husbands; for unless they can both give and receive enjoyment, neither can be happy, loving, or contented. In most every instance full restoration and full enjoyments can be permanently given, if there be any constitution left to build upon. Frequently the cause of sexual disgusts arise from the organ in man being too small, either from inherited diseases or decay, superinduced by self-abuse, indiscretions, etc. When this is the case, the restoration of the organ to its natural tone, power, and full size is the only cure; and if, as in the other, there is foundation and vitality enough in the system to make a start from, all can be fully righted; and that extreme mortification which many feel, knowing their inability to perform with satisfaction the demands of matrimony, can be avoided. We must first ascertain the causes, which is easily done by personal application at my office, or by letter giving the replies to questions asked invalids in Chapter XXXVIII. of this work. In concluding this paragraph, I will add that but few, comparatively speaking, obtain the gratification and pleasures which their natures are capable of imparting. Even those whose adaptation is not as congenial as it might be, if sensible and proper remedial means and judicious instructions were used, might escape all the bickerings and perplexities which they may now be subjected to. Sexual excess often

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produces indifference for connection, even where two are properly mated, and often causes much unhappiness and scoldings at the "*uncongenial matrimonial halter;*" if this class would only adopt some means to remedy this sexual indifference, and make their natures more congenial, instead of fretting and scolding, and aggravating an estrangement, they would save themselves many unhappy hours, and would soon be to each other what the All-wise intended they should be. Barrenness, or being without children, where they are desired, either by one or both parties, or having more than can be well provided for, are causes which often produce much misery and unhappiness. In all these annoyances the old system of practice and medicine affords no relief, and many come to the conclusion they must continue miserable until death relieves them. Now to all who thus suffer, I request that they correspond or consult me freely and frankly. Remember my bosom for ever covers the secret of my patients, and that the most important and delicate subjects are those which reach my hands more often than any other, and I am proud to say no one has ever been the wiser for such knowledge imparted; and that the means which I use in these several cases has met with the most flattering success I am truly happy to state.

Replies to Curious Questions.—I am in constant receipt of letters, making inquiries as to the suitability of the applicants for marriage. "One wants a lover." "One is neat, but quick-tempered, cross, and ugly;" the one he would wish, is "all that could be desired, but slovenly." "One has some physical ailments or deformities, and fears marriage." Another "loves his lady unto death, but she is cold, and gives him no encouragement." Again, the case is reversed, and the "lady suffers disappointments." "One is a flirt," and another has a "most cruel and jealous disposition." One is an "angel in perfection," and the other "closely resembling what we should imagine of the gentleman who is said to rule the lower regions." One's "affections have been trifled with." Another the "victim of misplaced confidence." "One has loved, not wisely, but too well." Another is a "heartless wretch, for whom hanging would be to good." And we might continue the list for pages, but enough is here to have all understand the nature of the inquiries; not a few ask if Mr. or Professor "Somebody's" "Love Powders," "Elixir," or "Perfumes" (or in fact what not?) will remedy this or that fault? Can this or that preparation be relied upon to make the lady or gentleman love each other? or, if not reliable, will *I* not send them a

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"Love potion," or something to bring peace and happiness, where confusion and misery now reign. Now in reply to these questions let me say, I can not for a moment believe that any of my readers have *faith* in any such thing as "Love Powders," "Elixirs," or "Perfumes;" none but a charlatan would deal in or attempt to so impose on a confiding, and perhaps broken-hearted human being, for these preparations so named have no more virtue in them than so much dust; and he or she who places faith in them is but a victim, for the results, which *any* may imagine have been produced by this or that preparation of "love"(?) would have just as surely occurred *without* the use of it. Shun all men who would so attempt to impose upon you, and if you must have "Love Powders," etc., I will tell the reader how he or she can make one, two, or three dollars (which is the price usually charged for this trash), and that is, by making them yourselves; which is done out of ten grains of flour, or of chalk, or of orris root, or, in fact, very fine dust, if nothing else be handy. You can perfume to suit with any of the oils.

The only true way in which the little differences and discrepancies which may exist between parties who wish to cast their affections upon some *particular one* for life can be remedied, and the parties made perfectly congenial, and their feelings mutual, is to first know *what produces* these differences in views, or what physical deformities or ailments may exist; and in order to reach the correct *cause* or *causes*, we must have a full description of both parties interested, about the age, height, color of hair and eyes, occupations, standing in life, general dispositions, and all other information which may have a bearing on the case. It is important for our happiness and well being that a partner suitable to our various pursuits or conditions in life should be obtained, one who will enter into, and sympathize with us in all our various joys and sorrows, and whose thoughts, feelings, and aspirations harmonize with our own. Heed this, you that are young; it is no idle matter, but should be calmly considered, and discretion used in your choice. As this is a subject not properly belonging to the duties of a medical man, and as the various cases presented (no two being exactly alike) require much time, and often mature deliberation, I am compelled to make a charge of two dollars for such counsel and advice. All who address me on the subjects named in this paragraph, giving particulars asked for, and enclosing charge, can rely on most satisfactory results, and all communications being treated as *strictly* confidential.

In connection with this chapter I would caution the public to

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beware of any one offering for sale remedies said to be prepared by me. *I prepare only for each case individually*, never through agents; and do *not* go on the "hit or miss" principle, which must be the case with all preparations which are to be taken indiscriminately as a general "cure-all." My doctrine is a union of the best principles of all the medical schools, and the administration of remedies conducted on the finest laws of analytical chemistry. The principles in which we place our faith are TRUTH, SCIENCE, and HUMANITY. In all cases *conscientious advice will be given*, and *if beyond our skill, we frankly confess it.* We will not promise to perform *impossibilities*, but *all shall be truthfully advised — faithfully and honestly served.*

In concluding this portion of our work, I will simply state that the various chapters are composed of *truth* and *facts;* they furnish a vast variety of food for reflection, and will serve to enlighten the reader on every possible subject connected with the human system. I have endeavored only to exhibit the truth of the various subjects, and leave to each individual reader to receive or reject.

"Truth would you teach to save a sinking land,
All shun, none aid you, and few understand."

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THE

METALLURGIST'S GUIDE,

WITH

SECRETS OF TRANSMUTATION.

CHAPTER I.

Comprising all Improvements made in the Arts of Science and Mechanics, both in Europe and America; being a full and comprehensive Teacher on the preparing of every Amalgam, Alloy, and Mineral used in Manufacture and Commerce. Selected from Ancient and Modern Works of the highest Authority, containing all Important Discoveries to the Present Day.

THE world contains many scientific works treating on metals, alloys, etc., and what claims to be the science of transmutation. Few give a single *practicable* lesson. The object of this work is to present to the reader only those receipts and compounds which, when properly made, will yield large returns on the outlay required, and which can be readily understood by the most inexperienced. A large and profitable field is here opened to all who desire knowledge, or wish to engage in profitable undertakings.

Metals form the most numerous class of nude compounded substances in chemical arrangements, and are at once distinguished by characters which all recognize, though, to an ordinary observer, they do not appear to differ essentially from each other. Their color and other physical properties are owing to adventitious circumstances and some slight admixture of other substances. This opinion is the natural and prevailing doctrine of the learned.

The metals are all solid at atmospheric temperatures, excepting quicksilver. Their lustre is grand: the words "metallic lustre"

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convey "brilliancy," readily understood. Metals reflecting light, are no less noted for opacity than lustre. Silver, one hundred thousandth of an inch in thickness, is perfectly opaque; other metals, of similar thickness, in general allow no light through their substances; yet gold, rolled to the two hundred thousandth part of an inch in thickness, seems to show through green rays of light. This is accounted for as coming through the pores, and not through the solid metal, which no luminous rays can penetrate.

Metals are in general excellent conductors of heat and electricity, though not all of them. Most, when polished, are excellent reflectors of heat and light, and are peculiarly fitted to the uses of mirrors.

Metals possess a peculiar tenacity, in different degrees, rendering them *malleable* and *ductile* — meaning, they will expand under the hammer, and draw into wire. Gold and silver can be beaten into leaves so thin as to astonish those not acquainted with the nature of these metals. Platinum, copper, tin, and lead have the same properties, but less developed. Many metals are wanting in this property: thus cobalt, antimony, and arsenic, are known as brittle metals, being easily reduced to powder.

Gold and silver are not only the most malleable, but are also the most ductile; hence a single grain of gold may be hammered so as to cover fifty-two square inches of surface, or drawn into five hundred feet of wire; if enveloped in silver, it may be extended seven hundred feet. Also platinum, which is not equal to copper or tin in malleability, has been drawn into *one thirty thousandth* of an inch in diameter; so fine, in fact, that only under favorable illumination can it be seen at all. Iron will draw as fine as the human hair; copper is less ductile. Tin, zinc, and lead will draw, but less fine; none of the brittle metals draw.

When metals are *pure*, but few are very hard; some yield to a nail readily. The following arrangement of hardness is from Dumas: —

Mercury is liquid above minus 39°.

Sodium and Potassium are soft as wax at 60°.

Lead yields to the nail.

Zinc, Antimony, Iron, Cobalt, and Nickel are scratched by glass.

Rhodium and Chromium scratch glass.

Tin, Cadmium, Bismuth, Tellurium, Silver, Gold, Copper, Palladium, and Platinum are scratched by calc-spar.

Manganese, Tungsten, and Titanium are harder than steel.

Metals differ in the amount of heat required to melt them as much

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as in any other respect. Mercury requires to be cooled down to minus 39° before it is solid; in contrast, Platinum requires a heat beyond 3280° before it will melt. Potassium melts at 140°; Sodium at 190°; Tin at 444°; Bismuth at 500°; Lead 600°; Zinc 770°; Antimony at 800°. Silver, Gold, and Copper require a bright cherry-red heat to melt — about 2000°. Cast Iron, Cobalt, and Nickel require a white heat — about 2800°. Manganese and Malleable Iron, highest heat of a smith's forge — about 3000°. Columbium, Platinum, Rhodium, Iridium, Osmium, Ceriune, Titanium, Chromium, Tungsten, Uranium, and Molybdenum are metals which require the highest heat of our best furnaces, or use of oxy-hydrogen or aero-hydrogen blowpipe, or voltaic electricity, to fuse them when in a pure state. Some metals boil and evaporate when heated sufficiently. Mercury, Cadmium, Zinc, Tellurium, Bismuth, and Antimony boil and evaporate at read heat. Mercury is known in a vacuum to evaporate at temperature of 50°. Silver and Lead require high heat to evaporate them; Tin still higher heat. Gold will only evaporate under the most intense heat known. Other metals, as Iron, Nickel, etc., will not evaporate under any heat known. Arsenic evaporates without melting.

Some of the metals have a peculiar odor when rubbed, or have their temperature raised. Copper, tin, and iron are thus noted. The vapors of others are also wonderful. Arsenic vapor is like the smell of garlic; tellurium smells like horse-radish; and osmium has its name from the smell of its vapor (*osme*, odor). Some metals have also a peculiar taste, and, when touched by the tongue, produce a sensation similar to an electric current. Many of the most oxidable metals have neither *taste* or *odor*.

A very high specific gravity was considered one of the characteristics of the metals, until after the discovery of the metallic basis of the alkalies. The metallic lustre was so impressed upon the mind with great weight, that a piece of potassium being put for the first time in the hands of a Professor, in admiring its metallic character he poised it upon the finger, and exclaimed, "How weighty!" This idea was only removed by seeing the same piece float upon the water. In the list of metals, however, may be found the densest forms of matter which are known; and while great weight can not be considered as a universal property, there are few examples in which the density is less than that of water. These examples refer only to sodium and potassium; all other metals are of a greater specific gravity, up to platinum, which is twenty-one times the weight of an equal bulk of water.

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The tendency of metals to combine with oxygen are greatly influenced by their mechanical condition; some of them which are oxidized very slowly by air and heat are acted upon rapidly, when in a very fine mechanical division, even at ordinary temperatures. In combining with oxygen, under heat, some of the metals burn with great splendor; we have as examples copper, bismuth, tin, and zinc. Iron filings, if thrown into the flame of a candle, and fine iron wire, if held in the external part of the flame, burn and show a beautiful light. Antimony burns at a white heat. Tellurium burns before the flame of the blowpipe. Most of the metals can be burned, and if placed before the compound blowpipe, they burn with intense brilliancy and without trouble. Potassium burns, by contact with a piece of ice, with as much intensity as do the others by contact with the flame of compound blowpipe.

Some of the combinations of metals with oxygen are soluble in water and alkaline; among which are the *fixed alkalies*, soda, potash, and lithia, and the *alkaline earths;* others are soluble and sour, forming the *metallic acids*. Some are insoluble in water, having neither taste or smell; others, when they enter the stomach, act as poisons. Oxide of arsenic is a virulent poison. Oxide of copper less so than arsenic. Oxide of lead is a painful poison. Oxide of nickel will also cause death, as will the peroxide of mercury.

CHAPTER II.

ALLOYS, NATURE OF METALS, NAMES, ETC.

Metallic alloys are formed by a combination of metals, thus rendering them more valuable and useful than the metals which go to compose the alloy, and have also properties different from their original formation. The most distinguished and useful of all the alloys is a compound of copper and zinc, known as brass; it is more easily melted, less liable to tarnish, and is more close in texture, and harder than copper; it is not so brittle as zinc, and is more valuable in every respect. Copper and tin are readily fused, and form combined an alloy for bell metal; it is harder and more brittle than iron, and has a clear and distinct ring. This mixture, differ-

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ently proportioned, forms also speculum metal, and an ordnance known as brass cannon. Pewter is formed from lead and tin; some add zinc, copper, or bismuth. Fusible metal is formed from bismuth, lead, and tin; some add a little mercury. Tin foil is formed from tin and lead. Plumbers' solder is formed from the same metal. Printing types are formed from lead and antimony, with small addition of bismuth.

Zinc and mercury are employed as an *amalgam* for exciting electric machines. Tin and mercury are employed for silvering ordinary looking-glasses. American coin is an alloy of copper and gold, in proportion *eleven* of the latter to *one* of the former. Jewellers use the same, only in proportion *three* of the gold to *one* of copper. For green gold, silver is used in place of copper. Silver coin is also alloyed in proportion of *thirty-seven* to *three*. These metals, when alloyed, are harder, and wear less than pure metals.

Most of the alloys are formed by simple fusion of the metals together, the hardest metal always being fused first. If there is much difference in the specific gravities of the metals which form the alloy, the heaviest will generally keep at the bottom of the mass, making the top different from that of the bottom. This may be prevented to a certain extent by agitating the mixture until it becomes solid.

The metals, so far as are known, comprise a list numbering forty-three distinct kinds, and are known as, 1. Gold; 2. Silver; 3 Iron; 4. Copper; 5. Mercury; 6. Lead; 7. Tin; 8. Antimony; 9. Bismuth; 10. Zinc; 11. Arsenic; 12. Cobalt; 13. Platinum; 14. Nickel; 15. Manganese; 16. Tungsten; 17. Tellurium; 18. Molybdenum; 19. Uranium; 20. Titanium; 21. Chromium; 22. Columbium; 23. Palladium; 24. Rhodium; 25. Iridium; 26. Osmium; 27. Cerium; 28. Potassium; 29. Sodium; 30. Barium; 31. Strontium; 32. Calcium; 33. Cadmium; 34. Lithium; 35. Silicium; 36. Zirconium; 37. Alumnium; 38. Glucinum; 39. Yttrium; 40. Thorium; 41. Magnesium; 42. Vanadium; 43. Lantanum. The heat required for the fusing of *all* these metals is considered of no importance to the general reader, and for all that may be put to a practicable use; the heat required has been given in Chapter I.

Poulliet gives the conducting powers of metals for electricity in the following order: Palladium, 5791; silver, 5152; gold, 3975; copper, 3838; platinum, 855; bismuth, 384; brass from 200 to 900; cast-steel, from 500 to 800; iron, 600; mercury, 100; silver is a superior conductor to lead, in the ratio of *twelve* to *one*.

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CHAPTER III.

MOULDING, MOULD MAKING, ETC.

In this chapter we shall give such instructions as to the manner of preparing moulds, as are best adapted to the wants of the general reader. Iron founders, and those who use complicated and expensive patterns, which require engineering skill to construct, and great masses of metal for casting, will find all the knowledge they may require on this subject in scientific works treating especially on *heavy* casting.

In moulding, two things are necessary: first, a model, or pattern; second, a substance which will *receive* accurately and *retain* the impressions of the pattern made upon it, against the violence of the liquid metal when poured into the mould.

Of all moulds those made from sand or loam mixed with clay, are the most difficult of construction; and the more experience one has in the making of these, the better will be his casting. In addition to receiving and retaining the impression of the pattern, they must admit of the air and gases escaping; for, if air tight, the pressure arising from the rapidity of the generating gases would spoil the casting, and might cause injury to the operator, if the gases are confined in the mould. The casting becomes what is termed *blown*, that is, the surface is filled with bubbles of air, making the texture porous and weak, besides ruining its appearance. However, moulds made from the above ingredients are excellent for the escape of gases, and the casting is seldom injured by being *blown*, if the slightest attention is given in preparing the mould.

Plaster of Paris is used for a number of the more fusible metals; but for the more refractory ones, such as iron and steel, and where large quantities of metal are used in one casting, sand mixed with clay or loam, has many advantages. For brass moulds, old damp sand is preferred; meal, dust, flour, chalk, soap-stone, etc., are used as facings for the mould; if the work is very fine, a facing of rotten stone or charcoal, can be used. The proportions of sand and loam to be used for moulds is explained: the more sand used, the more readily will the gases escape, and less chance for spoiling the

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casting. On the other hand, the more loam used the more distinct will be the impression, but greater risk is run in spoiling the casting. This may however be entirely avoided by well drying the mould before pouring in the metal, as you would have to do was the mould entirely of loam.

Where soft metals are used, and large quantities of any one casting are needed, the metallic mould is cheaper and superior in every respect to any other; for example, the bullet mould for fire-arms. For moulding pewter, brass moulds are generally used; they are heated before pouring in the metal, in order that the casting will leave them more readily, and to give the casting a fine face, the mould is brushed over with red-ochre and white of an egg; or, in some cases, a thin film of oil may be used instead. Moulds which have several parts, must be carefully fitted, otherwise the casting will be imperfect.

MEDALLION PLASTER MOULDS.

To make these moulds, first obtain some fine plaster and press it through a muslin sieve; this removes all coarse particles. By mixing *gum arabic* with the water intended to be used, the plaster will be rendered hard when it sets, and have a beautiful glossed surface. Be careful to drop the plaster slowly in the water, and permit bubbles to rise before stirring the mixture; this prevents all lumps forming in the mould. The plaster should be of the consistence of the yolk of an egg, and used at once. If the medal to be copied has a smooth surface it is not necessary to oil it, but if a rough surface it must be oiled, and the oil afterwards removed by rubbing the medal carefully with a soft rag. A rim of thin lead, brass, copper, or even oiled paper, is then tied around the medal, and some liquid plaster, in the first place, stippled over its surface with a soft brush, to prevent air bubbles, as well as to insure its insertion into every crevice, after which pour the plaster upon the surface to half an inch in thickness, or an inch, if a large medal. To separate the mould from the medal, immerse it in water, and it is readily removed; otherwise the mould is sure to break. To obtain a plaster cast from this mould, oil it with *warm boiled linseed oil*, allowing it several days to dry. Whenever the mould is used oil it well, otherwise the surface of the casting will be destroyed. The best *olive oil* must be used, as it does not injure the plaster.

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MOULDS FOR FRUIT, BIRDS, INSECTS, ETC.

To make these moulds, provide a box of sufficient size, suspend by thread or small twine, in several places, the bird, insect, or fruit you wish cast. Now mix 4 parts of plaster of Paris with 2 of fine brick dust, add water to bring to consistence of cream; with this cover the article intended to be cast, using care not to distort it from the natural position. When you have filled your box with the plaster, etc., let it harden, and place it near the fire by degrees until you can make it red hot. Then let it cool, and with a bellows blow and shake out all the ashes from the mould you can; then add a little quicksilver and shake it round in the mould, in order to loosen every particle of the ashes therein; also to make a passage through where the strings were tied, in order to let out the gases when you pour in your metal.

EXCELLENT MOULDS FOR ALL IMPRESSIONS.

Melt together 4 ounces of beeswax, ¼ ounce of rosin, ⅛ ounce of Burgundy pitch, with a very little Venetian red. Have no cover on the pot while mixing it, as it may cause it to stick.

To take an impression: Pour it into a shallow metal plate; when cold, brush it over with black lead, then black-lead the article to be copied, lay it on the surface of the wax and subject it to pressure in a vice or letter-press; remove the article and black-lead the mould again, when you will apply it to the battery. Having made a solution from the sulphate of copper, — copper 4 ounces, rain water ½ pint, — immerse the mould or impression in this solution, first attaching it to the wire of the battery. This gives the impression a metal body to withstand the heated metal.

Another mode is, if you suspend a medal in the solution of copper, attached to the battery by a fine copper wire put around the edge, it will cover the article with an exact likeness in mould, requiring a few hours only; then loosen the edge with a penknife, and peel each side off, and you have the exact mould, thin or thick, according to time.

EXCELLENT ALLOYS FOR THESE MOULDS.

Take grain tin 6 ounces, bismuth 2 ounces, and lead 3 ounces; melt together in an iron ladle. This will fill out splendidly and give satisfaction.

Another alloy, which can be dissolved in boiling water, is composed of 8 parts of bismuth, 5 parts lead, 3 parts tin. This will melt at 212°.

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Another still more fusible alloy is; 2 parts bismuth, 1 part lead, and 1 part tin. Melts at 200°.

Dalton's alloy is composed of 3 parts tin, 5 parts lead, and 10½ parts of bismuth. Melts at 197°. The addition of a little mercury makes it more fusible, and can be used as a coating to the inside of glass globes.

An alloy of equal parts of bismuth and tin melts at 280°. A less quantity of bismuth adds to the hardness of tin, and is used in the formation of pewter or pewter solder.

GLUE MOULDS.

Glue makes, in some instances, an excellent mould. Thus, if a medal is much sunk or engraved, so that a plaster cast cannot be had of it, you have simply to pour the glue over it; also a bunch of grapes, or fruit of any kind, can be taken in the natural state, and by cutting the glue down the centre the fruit can be extracted, and the mould used to produce an original in plaster. When the plaster is hard, place the whole in boiling water, when the glue will disappear, leaving a perfect cast of the fruit, etc.

BREAD MOULDS.

Bread is also used as a mould. Thus, take the inside of fresh bread, work it up well with vermilion, the longer the better, until it becomes viscid and tough; it must then be worked well into the mould. After obtaining the mould, it must be fastened to a piece of wood by wetting it; you will thus prevent the mould from warping as it dries.

After *dry* you can oil it, and obtain as many casts as you desire, either in plaster, wax, or sulphur. By means of bread paste a traveller may obtain the model of any small object he desires, and thus a proper knowledge of its mode of use becomes invaluable. Ruins of tombs and temples, scrolls, etc., have often been copied and brought home at a trifling cost.

BLUCHARD'S DISCOVERY FOR MAKING DIES.

Take of platina, copper, silver, and zinc equal parts, fuse these thoroughly together and mould into desired forms, bringing the same nearly to a white heat; now lay on the articles you wish an impression of, pressing on with sufficient force, and you will find that you have a perfect impression. When the die becomes cold you will find it to be harder than steel, and can be used for any of the purposes for which a steel die is required. Moulds of every

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description are also said to be made most beautifully from this composition, and articles cast in them attain a perfection and precision rarely to be met with in other methods.

Another superior substance to steel for dies and moulds, is made from 500 parts steel, 1 part platina, and 1 part silver, thoroughly combined, and treated same as the above, to obtain the impression.

CASTINGS IN IMITATION OF IVORY.

Make isinglass and strong brandy into a paste, with powdered egg-shells well ground. You can make it any color, but throw warm water into your mould, which should be previously well oiled over. Leave the casting in the mould to dry, and on taking it out you will have a figure resembling ivory.

CHINESE AND JAPANESE STATUARY MIXTURE.

Mix rice flour thoroughly in cold water, simmer it gently over the fire, when it readily forms a delicate and durable cement, answering for common paste, or for joining together cards, paper, etc. When made the consistence of plastic clay, models, busts, basso-rilievos, etc., are formed from it. It will receive a high polish and is very durable. The Chinese, Japanese, etc., make their principal domestic idols from this. Any coloring can be used.

ORNAMENT COMPOSITION.

Take powdered chalk, any quantity; add as much thin glue as will make it into a paste, which mix well together. Then put into moulds, being a little oiled, and press it well in; after which take it out, and it becomes, in time, as hard as a stone. Make no more of the composition than you need for present use, as when once hard it is of no further use. Color to suit.

In concluding this chapter but few remarks need be added. Where hard metals are used for casting, the best temperature for pouring is that which will take the sharpest impression and yet cool rapidly. If sand moulds are used, and the metal is very hot when poured in, and remains long in contact with the sand, what is termed *sand burning* may occur, in which case the face of the casting may be injured. A little attention on the part of the operator will prevent all overheating of the metal, which is readily known by the peculiar smoke arising when burning of metals occur.

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CHAPTER IV.

REDUCTION OF METALS, ETC.

In this chapter we shall give a description of the principal metals used in forming castings upon which this work treats.

REDUCTION OF COPPER.

The first process is by calcining it, and when sufficiently *roasted*, so as to oxidate the iron which it contains, it is melted. The metal is then, after a time, suffered to flow into a reservoir filled with water, where it becomes granulated. It then has another heating, and the *slag* is taken off, when it is again run into water. After these operations it is cast into sand, solid, and in this state is termed *blistered copper*. It is now fit for the refinery, where it undergoes *refining*, or *toughening*. This requires much skill and care of the workmen, as the object is to remove all oxygen and to thoroughly purify the metal, which is accomplished by adding charcoal to the metal while in fusion, and stirring it occasionally until judged to be pure.

When copper of extreme purity is required, Mr. L. Thompson directs that 100 parts of copper be melted with 10 parts of copper scales (black oxide), and 10 parts of ground bottle glass, or other flux. After the copper has been in fusion for half an hour, it will be found at the bottom of the crucible perfectly pure, while the iron, lead, arsenic, etc., which the metal usually contains, will be oxidized by the scales, and will dissolve in the flux, or be volatilized. Thus can pure copper be had from brass, bell metal, and other alloys, containing from four to fifty per cent. of iron, bismuth, lead, antimony, arsenic, etc. Its specific gravity is nearly 9; it requires a white heat, and melts at a temperature of 1996° Fahrenheit.

REDUCTION OF TIN.

This metal has, like copper, been known from the most remote ages, and is traced back fifteen hundred years antecedent to the commencement of our era. The greater part of the East Indian tin comes from Siam, Malacca, and Banca. The best ore is found

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in Cornwall; it is generally blasted by gunpowder, and is obtained in pieces of considerable size. It is then reduced in a *stamping mill* to powder, where it is well washed of all earthy matter, and the tin prepared for the furnace.

After being roasted in a reverberatory furnace it is again washed and re-subjected to the furnace, being now mixed with small coal, and, in some cases, a small amount of lime. The metal thus procured is placed in a small furnace, and exposed to a very gentle heat, when the purest tin melts first, and is drawn off. This is termed *grain-tin*. The inferior, which contains a small portion of copper and arsenic, is cast into pigs, and is known as *block-tin*. The purest tin from Cornwall affords from sixty to seventy-five per cent of superior grain tin; its specific gravity is about 7.5, and melts at a temperature of 442° Fahrenheit.

REDUCTION OF ZINC.

Zinc is found in a state of oxide and sulphuret. The purifying of zinc may be accomplished by melting the impure metal with lead, in equal parts, in a deep iron pot, stirring them well together, skimming off the impurities as they rise, covering the surface with charcoal to prevent oxidation, and keeping up the fusion for three hours. The lead by its greater density descends to the bottom, leaving the zinc to be drawn from the surface by a pipe in the side of the melting pot. This process is patented by Mr. W. G. Kneller, and bears date of 1844. The specific gravity of zinc is about 7.7; its fusing point is 773° Fahrenheit; but at a temperature of 310° Fahrenheit it is very malleable, and may be rolled into leaves, or brought into very fine wire.

LEAD.

Lead is also a very ancient metal. It is highly poisonous, and great caution should be observed in its use for domestic purposes, as when in contact with water in open vessels it quickly tarnishes, and small crystalline scales of oxide of lead are formed, a portion of which dissolves in water, and is again precipitated in the form of a carbonate. If, however, the water contains a very small portion of sulphuric acid, or a soluble sulphate, the corrosion is prevented. Lead is found in greater or less quantities in almost every country. Its specific gravity is 11.4, and melts at a temperature of 612° Fahrenheit.

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ANTIMONY.

This metal was discovered about the fifteenth century. It is of a grayish white, having a slight bluish tinge, and is very brilliant. Its texture is lamellated, and has plates crossing it in every direction. Its surface is covered with herbarizations and foilage. It will scratch all the soft metals, and burns by a strong heat. It unites with sulphur and phosphorus. It is soluble in alkaline sulphates. It decomposes water strongly. Nitric acid dissolves it in the cold; muriatic acid scarcely acts upon it. Sulphuric acid boiled upon antimony is feebly decomposed. The oxygenated muriatic gas inflames it, and the liquid acid dissolves it readily. Arsenic acid dissolves it by heat with difficulty. It unites with gold in fusion, rendering it brittle and pale. Platina, silver, lead, nickel, bismuth, arsenic, copper, iron, zinc, tin, and cobalt unite with antimony in fusion, and compose compounds more or less brittle. Mercury does not alloy with it readily. Nitrate of potash is decomposed by it. It fulminates by percussion with oxygenated muriate of potash. Its specific gravity is 6.702, and fuses at 810° Fahrenheit.

BISMUTH.

This metal as met with in commerce is not generally pure. It contains usually iron and arsenic. To purify it, dissolve it in nitric acid; the solution to be decomposed by water, and the precipitate, after being boiled in a solution of soda, is to be mixed with black flux, and moderately heated in a crucible. At a high heat, bismuth is volatilized; may be distilled in close vessels, and solidifies in foliated crystals. If simply fused in a crucible, and slowly cooled, it crystallizes in well-defined cubes. When combined with copper it forms a pale-red, brittle alloy. With silver it forms a brittle compound, and has been advised as a substitute for lead in refining silver. It is said to form a more fluid oxide, which is more penetrating than lead, and may be used in smaller quantities. With mercury, it forms a fluid alloy. Tungsten, palladium, rhodium, platina, and gold are made brittle by combining with it. Its principal use is in *fusible* alloys, and as an ingredient in solder. It is often termed *tin glass*, being very brittle and easily reduced to powder. Its specific gravity is 9.80. It melts at 462°, 467°, and 497° Fahrenheit, according to the purity of the metal.

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ARSENIC.

This is a brittle metal, and when first fractured is of a lively bright color; but on exposure to air it becomes a dull, and finally a black color. It is harder than copper; its ductility is but little, and its brittleness so great that it readily forms a powder under the hammer. It is volatilized at 356° Fahrenheit. It sublimes in close vessels, and then crystallizes in tetrahedra or octahedra. When heated it emits a smell of garlic, and burns with a bluish flame. It combines with sulphur in fusion. It unites to phosphorus, and combines with most of the metals. It gives a white color to copper, and renders many of the ductile metals brittle. It is a deadly poison. Its specific gravity ranges between 8.310 and 5.763, according to its texture.

PLATINA.

The Spaniards mix platina with iron in forming gun barrels, which are said never to rust, and are superior in strength to iron alone, as it gives to iron a most wonderful toughness. As a coating for copper and iron it is valuable, and may be hereafter used in the formation of coins, medals, etc. Mirrors for telescopes, etc., are made of exquisite beauty from this metal.

Platina, in its malleable state, may be cut with a knife, but with steel it constitutes an alloy not to be touched with a file. In its purity it can only be melted with the oxy-hydrogen blowpipe. The nitro-muriatic acid is the proper solvent for platina.

PLUMBAGO.

This is a compound of 9 parts carbon to 1 of iron. It is known also as *black lead*, though it is entirely different from lead, except in its properties for marking paper.

In this combination we have an alloy less cohesive than almost any other substance, mercurial amalgam excepted: while the same ingredients, different in proportions, produce *steel*, which has properties diametrically opposite, and is capable of cutting the hardest substances, with very few exceptions. The softest steel is harder than the hardest iron.

BORON, OR BORAX.

This substance has long been used in the arts and in medicine. It is found in large quantities in Thibet and South America; but being very impure, must be refined before fit for use. In taste

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borax is sweet, and is soluble in twelve parts of cold and two parts of boiling water; its crystals are transparent, but become opaque in a dry atmosphere, and appear luminous by friction in the dark. It melts at a heat a little above boiling water, and gives out its water of crystallization; after which it forms a spongy mass, well known as *calcined borax*. When further heated to ignition it becomes a glassy-looking substance, known as *glacil borax*.

Borax when dry, at a high temperature, has the property of melting and vitrifying the metallic oxides into glasses of different colors. On this account it is a most valuable re-agent for the blowpipe. Borax is used to clean the surface of metals, in process of soldering or welding. It is also valuable in fusion of metals, to protect the surface from oxidizement. When mixed with shellac, in the proportion of 1 part to 5, borax renders that resinous substance soluble in water, and forms a species of coating or varnish.

SULPHUR.

This substance, commonly known as *brimstone*, has a brittle, non-metallic appearance, and a dull yellow color; is very combustible, and at a temperature of 218° Fahrenheit, forms a liquid; at 300° Fahrenheit it ignites, and has a blue-like blaze; but as the heat increases, the blaze becomes whitish; in pure oxygen gas it shows with great brilliancy. Native sulphur comes here principally from Sicily. It is put to a great variety of uses. When combined with hydrogen it forms a very dangerous and poisonous gas, known as *sulphuretted hydrogen*. It also is an excellent flux in the making of brazing solder, and likewise forms into combinations with metals.

SELENIUM.

This is a rare elementary substance, having properties similar to sulphur, although in some respects appears in nature a metal. It first came from the refuse in an oil of vitriol factory, and doubtless had its origin from the iron pyrites employed in these works. It has also been obtained, sparingly, in combination with several metals, sulphur, etc. When free from impurities, at common temperature, selenium is brittle, solid, and of a reddish brown color; it has a metallic lustre, and without taste or smell. At 180° Fahrenheit it softens; is a paste at 200° Fahrenheit, and melts at a heat a little above the boiling point.

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METALLIC OXIDES.

Science has proved that none of the earths are simple substances, that is, chemical elements. That they are in fact compounds of certain metals with oxygen — that is, metallic oxides. This has been proved by the direct method of abstracting oxygen from them, and thereby separating the metallic base. Thus, alumina (the basis of alum) is the oxide of a gray and hard metal like platina, and which burns very brilliant when heated with access of air, and reproduces the earth by absorption of oxygen from the atmosphere.

It is strange that soda, as distinguished from potash, has been known with us only of late years. It was familiar to the Hebrews and Greeks, and was also known in Egypt, where it was found native, and named *Natron*, being recorded in the Bible.

From these examples we are justified in our conclusion that the solid strata of our globe — that is, the superficial shell which is known to us, if not the vast mass of the globe itself — are nothing but masses of metals of various kinds disguised by oxygen; that they are in fact oxides, and bear evidence, in most cases, of being the results of combustion.

CHLORINE.

This enters into many very important and interesting combinations. Various bodies when immersed in it, when in a liquid state (that is, when submitted to a pressure of four atmospheres, it becomes a yellow transparent liquid) take fire spontaneously. A candle will burn in it with a red flame: a piece of phosphorus put into it, gives a pale-white light. Antimony, copper, tin, zinc, and arsenic, when in their leaves or filings, if introduced into it, take fire, and forming with the gas, make compounds analogous to the oxides, and which are consequently termed *chlorides*. Mercury also enters readily into combination with it, forming chloride of mercury, a substance generally termed *corrosive sublimate*.

The water of the ocean is the principal source of chlorine. This is an immense quantity of the solution of salt — an indispensable article of consumption with all human beings; an article which seems essential for the maintenance of the body in a healthy condition. Now this salt is a compound of chlorine and a metal. It consists, when pure, of 60 parts of chlorine and 40 of sodium, making 100 parts; and whether obtained by evaporation from the water, or dug out of the salt mines of Norwich or Wieliczka, it is the same in composition.

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In concluding this portion of our work we will state that the facilities of working the various metals named in this chapter differ considerably. Thus in wire drawing, gold is the most ductile, being 1, copper 5, zinc 6, tin 7, lead 8. Their relative values as laminable substances are very different: thus, under similar circumstances, copper is 3, tin 4, lead 6, zinc 7.

CONTRACTION OF METALS.

Another point may be here mentioned to advantage, namely, in making patterns for castings which must be exact as to proportions, the operator must allow for their contractions, which, when cold, equal from about the ninety-fourth to the sixty-seventh part of the length, being about 1 per cent. This may be guarded against by providing a rule, made like a surveyor's rod, but $\frac{1}{8}$ of an inch longer in every foot than the ordinary standard measures. By so doing every measurement of the pattern is made proportionally larger without any further calculations. When the pattern is of wood from which an iron casting is needed, the cast being for a permanent pattern, there being two shrinkages to provide for, a double contraction rule must be used, or one the length of which is $\frac{1}{4}$ of an inch in excess in every foot. The importance of these rules are seen in preparing alterations to existing machinery. The latter is measured by the common rule, while the pattern is prepared by the same nominal measures, with the single or double contraction rule, as the case may require. These three rules should be made dissimilar in looks, so as to avoid confusion in their use. The contraction of brass is about three-sixteenths of an inch in each foot, and in some other metals more or less. The use of contraction rules where much precision is required for the casting is thus shown to be of vast importance.

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CHAPTER V.

FLUXES, ETC.

THESE are used in the fusing of metals which require great heat, preventing the air from coming in contact with the metal, and are formed from various materials. Thus, powdered charcoal forms an excellent flux in some meltings, as also does the common borax, generally used for welding.

WHITE FLUX.

Take 2 parts tartar, 1 part nitre; mixed thoroughly.

REDUCING FLUX.

Use 10 ounces of tartar, 3 ounces 6 drachms of nitre, and 3 ounces 1 drachm of borax; must be thoroughly mixed together.

BLACK FLUX.

This is formed by mixing 1 part of pulverized nitre with 2 parts bitartrate of potash. This mixture requires to be thrown into a heated earthen red-hot crucible, being careful not to fuse the mixture, for if fused the nitric acid of the nitre is decomposed, and its oxygen acts upon the tartaric acid; thus carbonic acid is formed, and this uniting with the potash, both of the nitre and bitartrate is converted into carbonate of potash. All of the carbon of the tartaric acid is not, however, so acted upon, the excess remaining mixed with the carbonate of potash, in the form of coarse grain charcoal. This flux should be at once reduced to powder, and kept in a bottle well corked, as the carbonate of potash absorbs the moisture in the air, if exposed. This is a most valuable flux, as it combines with the earthy parts of the ore, such as silica and alumina, and also unites with the oxygen of the metallic oxides, and, carbonic acid being formed and expelled, the metal is reduced and melts. This is also specially recommended in detecting of arsenious acid, and reducing it to a metallic state.

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GENERAL REMARKS ON FLUXES.

Metals, as contained in the ores, are in most cases compounds, and if it is desired to separate them, we must put such matter in contact with them as will separate the metal from the compound; we do not precipitate iron by adding caustic lime, or carbonate of soda to the fluid mass; this addition merely renders the *slag* more fluid, without producing any metal. If we add sodium, the oxide of iron is deprived of its oxygen and forms metal. Carbon has more affinity for oxygen than metal, in the high heat of a melted silicate. If therefore carbon is added to the melted silicate of iron, some iron is produced. In all cases the metal needs a glassy, slimy substance as a coating to protect it against the influence of oxygen, when exposed in small particles to this influence.

Nearly all metals burn more readily than carbon; platina, gold, and silver, in some respects, excepted. If therefore we desire a metal, we must produce a *slag* to protect it, and at the same time admit of its coagulation. Where large masses of metal have to be melted (particularly those needing addition of tin and zinc), salenixum, the refuse from aqua-fortis, is the best flux, and with charcoal, surpasses all others. It can be had at most chemical works at a very small cost.

OPINIONS.

Nitre is said to be an excellent flux in melting arsenic for fixing it with other metals. In using iron filings corrosive sublimate is best for fixing it.

Flint glass, pulverized, is recommended as a valuable flux for copper, tin, and arsenic.

In adding from ½ to 1 ounce of arsenic to the pound of metal, it will improve it; if very porous, makes it harder, and also whiter. In using arsenic, tie it up in a paper; give it to the metal; stir it in with a hard piece of wood, well seasoned, and avoid the fumes until you can see no more vapors arise. In all rooms where metals are fused, or coal gases arise, an open space for receiving the gases and carrying them off should be provided.

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CHAPTER VI.

CRUCIBLES.

THESE are used for containing the metal to be fused, and as they are generally subjected to great heat, they should be composed of only the very best material. Pure fire clay mixed with powdered cement of old crucibles, adding a portion of black lead or plumbago, form composition producing pots of the first quality. The clay is prepared the same as pottery clay generally. The crucibles, after shaped, are dried slowly, and then baked in a kiln.

BEST BERLIN CRUCIBLES.

Those in use at the Royal Foundry are composed of 8 parts in bulk of Stourbridge clay and cement, 5 of coke, and 4 of plumbago or graphite. Wrought iron will melt in these pots, being equal to from 150° to 155° Wedgewood. A single pot has withstood twenty-five consecutive meltings of seventy-six pounds of iron each, being a remarkably severe test.

BLITZ CRUCIBLE.

8 pounds Stourbridge clay, 4 pounds burned clay cement, 2 pounds coke powder, and 2 pounds of pipe clay; mixed well, and compressed in moulds while in a state of paste.

HESSIAN CRUCIBLES.

These resist the action of fluxes, and are good for ordinary purposes, though they melt below fusing point of bar iron. They are somewhat porous. Their composition is from a fine clay, having a small amount of iron, but no lime. This is mixed with silicious sand.

BLACK LEAD (PLUMBAGO) CRUCIBLES.

These stand a stronger heat than the above. Their surface is smooth, and they are adapted to every use. Most all brass founders, both in Europe and America, prefer them to any other. They are composed of 2 parts of graphite and 1 part of fine clay; this is mixed by means of water into a paste. The crucibles are baked

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slightly in a kiln, but not hardened completely until put into the furnace for use.

Crucibles of *every* description, before using, should be heated very slowly at first, and if very cold weather, should be warmed before a fire.

TO MAKE FIRE CLAY.

The impurities in common clay, such as magnesia, iron, and lime, cause it to melt under heat readily. By removing these substances by steeping the clay in hot muriatic acid, then washing with water, and drying, a *good* quality of crucibles can be made from clay thus prepared.

CHAPTER VII.

RECEIPTS, ETC.

We have now reached that portion of our work wherein many valuable receipts are to be given, and which cannot be valued by money. These are all standard and reliable, and any *one* of them is worth twenty times over what is charged for the *whole* book. We only ask that the reader will appreciate our efforts to instruct, and to place within reach of all such information as has never been combined in any work, or half dozen works, heretofore published.

COPPER AND ZINC ALLOYS.

Gilding Metal for Jewellers. — To 1 pound copper add 1 to 1½ ounces of zinc.

Sound Copper Castings are produced by adding to 1 pound of copper ⅛ to ½ ounce of zinc.

Tombac (Red Brass). — To 1 pound of copper add 2 ounces of zinc.

Red Sheet Brass, Pinchbeck, and Bath Metal are formed by adding to 1 pound of copper 3 to 4 ounces of zinc.

Purbeck Metal. — Add to 1 pound of copper 5 ounces of zinc.

Bristol Brass. — Add to 1 pound of copper 6 ounces of zinc. This, with the mixtures named above, solder well.

Gold-dipping Metal. — To 1 pound of copper add 7½ to 8 ounces of zinc, which are the general proportions for all ordinary brass articles.

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SOFT SPELTER SOLDER. — To 1 pound of copper add 1 pound of zinc.

STRONG BRAZING SOLDER, used in heavy copper work, etc. To 1 pound copper add 14 ounces of zinc.

MUNTZ'S SHIP FASTENING METAL. — To 1 pound copper add 10⅜ ounces of zinc.

Copper, when pure and fused, is thick and pasty, and unless some alloy be added will not run into the finer portions of the mould.

In fusing metals of a low temperature, the surface of the metal should be protected from the atmosphere by a covering of rosin, pitch, or wax. If a high temperature is required to fuse, a covering of salt, borax, powdered glass, charcoal, etc., can be used.

Zinc being very volatile in nature, these exact proportions cannot always be adhered to. However, a *slight* variation affects the working and filing of the metal but little.

The copper should (*and always the hardest metal*) be fused first, the zinc being *forced* to the bottom of the liquid copper when added. All these alloys, as here given, when mixed together, constitute the *very best* of brass, and a superior metal for guns.

COPPER AND TIN ALLOYS.

SPECULUM METAL, FOR REFLECTORS OF LIGHT-HOUSES, TELESCOPES, ETC. — To 1 pound of copper add 7 to 8 ounces of tin.

LARGE CHURCH BELLS, ETC. — To 1 pound of copper add 5 ounces of tin. For large and small house bells, add 4 to 4½ ounces of tin to the pound of copper.

CHINESE GONGS, CYMBALS, ETC. — To 1 pound of copper add 3½ ounces of tin. For musical bells, add 3 ounces of tin to 1 pound of copper.

MACHINERY HARD BEARINGS. — Add to 1 pound of copper 2 to 2½ ounces of tin.

BRASS GUNS. — To 1 pound of copper add 1½ to 2 ounces of tin.

BRASS COG-WHEEL METAL. — To 1 pound of copper add 1½ ounces of tin.

METAL FOR MATHEMATICAL INSTRUMENTS. — To 1 pound of copper add 1¼ ounces of tin.

SOFT GUN METAL. — To 1 pound of copper add 1 ounce of tin.

METAL FOR CANNONS, BRONZE STATUES, ETC., is an alloy of copper with 8 to 10 per cent. of tin, with small quantities of other metals, which are not essential. Ancient bronze statues were formed of this.

TEMPER is composed of 2 pounds of tin to 1 pound of copper.

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It is used for adding to tin in making of pewter, the object being to introduce a very small amount of copper.

INDIAN GONGS are composed of 80 parts of copper to 20 parts of tin.

78 parts of copper added to 22 parts of tin form a metal nearly as brittle as glass, when cast into a thin plate or gong; yet if it be heated to a cherry red, and plunged into cold water, being held between two plates of iron to prevent the plate from bending, it becomes malleable. Thus gongs, cymbals, and tantums can be made from this alloy, having great richness of tone.

The above proportions of tin in these several receipts are the best now known, but for some peculiar object or speciality silver, zinc, and even arsenic are added. It is, as before remarked, always best to fuse the hardest metal first; and in case of silver and arsenic being added, melt them *separately*, adding to the copper at the lowest stirring point.

COPPER, TIN, ZINC, BRASS, LEAD, AND OTHER ALLOYS.

TENACIOUS METAL OF GREAT STRENGTH. — 1 pound of copper, 1¼ ounces of tin, ¼ ounce of zinc.

WHEEL METAL. — 1 pound of copper, 2 ounces of brass, 1½ ounces of tin.

COMPOSITION FOR GENERAL PURPOSES. — 1 pound of copper, 1⅞ ounces tin, 1⅛ zinc.

METAL FOR BEARINGS, NUTS, ETC. — 1 pound of copper, 2¼ ounces tin, 1½ ounces of brass.

TURNING METAL. — 1 pound of copper, 2 ounces tin, 1½ ounces brass.

METAL TO RESIST HEAVY STRAINS. — 1 pound of copper, 2½ ounces of tin, ½ ounce of zinc.

METAL TOO HARD FOR FILING. — 1 pound of copper, 2½ ounces tin, 2½ ounces zinc.

GOOD BUTTON METAL. — 1 pound of copper, 1 ounce of tin, 2 ounces of zinc. European button makers use 8 pounds of brass (called platina) to 5 pounds of zinc, — a very pale, white metal.

ENGLISH STANDARD MEASURE. — 144 parts of copper, 14.75 parts of tin, 12 parts brass.

WHITE SOLDER. — 10 pounds of tin, 6 pounds of copper, 4 pounds of brass.

BATH METAL. — 9 pounds of zinc, 32 pounds of brass.

PRINCESS METAL. — 3 parts copper, 1 part brass, ½ ounce zinc.

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BEST TOMBAC (BEAUTIFUL RED). — 5½ pounds of copper, ½ pound of zinc.

SUPERIOR BRAZING SOLDER. — 12 pounds of copper, 11 pounds of zinc. Flux with powdered brimstone.

KELLER BROTHERS' STATUE COMPOSITION. — 9140 parts of copper, 714 parts of tin, 118 parts of zinc, and 28 parts of lead — in all, 10,000 parts.

BLANCHED COPPER. — 8 ounces of copper and ½ ounce of neutral arsenical salt, fused under a flux of powdered glass and calcined borax, to which charcoal powder is added, makes this metal.

CORINTHIAN AND SYRACUSE BRASS. — For a spear-head, 6 parts copper, 1 part tin; for a knife, 7½ parts copper, 1 part tin; for an axe-head, 10 parts copper, 1 part tin. British weapons and tools, in bronze, were also formed from these metals.

MIRRORS OF BRASS. — Copper 8 parts, tin 3 parts, lead 1 part. A mirror similar is composed of 62 parts copper, 32 parts tin, 6 parts lead.

CHINESE PACKFONG. — Take of copper 6 ounces 7 drachms, zinc 4 ounces 1 drachm, nickel 5 ounces 1 drachm, about; iron, about 7 drachms. This composition is similar to German silver.

WHITE COPPER. — Take 89 pounds of copper, 100 pounds of zinc.

ANTIMONY AND COPPER. — Take 12 ounces of copper and 4 ounces antimony. Makes a brittle alloy, lamellated, of a violet color; will receive a high polish, and is more fusible than copper.

PEWTER. — Take 100 parts tin, 8 parts antimony, 4 parts copper, and 1 part bismuth.

TENACIOUS ALLOY. — Take 1 part bismuth, 1 part lead. 2 parts of lead to 1 part of bismuth makes an alloy which is excellent for moulding, where great sharpness and finish are wanted.

FULL CAPACITY AND MEASURE OF TIN AND LEAD. — 82 parts of tin to 18 parts of lead.

BRILLIANT AND FUSIBLE ALLOY. — Take 29 parts tin and 19 parts lead.

ANOTHER TENACIOUS METAL. — Take 1 part tin and 1 part zinc, as tough as brass.

SILVER STEEL. — 500 parts of steel to 1 part of silver. This alloy is superior to the best steel, and combines with other metals, such as nickel, platinum, manganese, etc.

SUPERIOR METAL FOR MAKING GILT ARTICLES. — Take 82 parts of copper, 18 parts of zinc, 1 part of lead, and 3 parts of tin. Another receipt is 3 parts of lead to 1 part of tin, using same amount of copper and zinc as above.

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FRENCH SWORD-HANDLES. — Take 80 parts of copper, 17 parts of zinc, 3 parts of tin.

FRENCH TOMBAC. — Take 92 parts of copper, 8 parts of zinc.

YELLOW TOMBAC. — Take 85 parts of copper, 14½ parts of zinc.

SUPERIOR BRASS ALLOY FOR FORGING AND ROLLING. — Take 62 parts of copper, 38 parts of zinc. This will work and roll at red heat. The very best is composed of 60 parts of copper to 40 parts of zinc.

SYRACUSE BRONZE. — Take 82¼ pounds of copper, 17½ pounds of zinc, and ¼ pound of tin.

CORINTHIAN BRONZE. — Take 90 pounds of copper, 7 pounds of tin, 3 pounds of zinc. Bronze was well known in Rome by the name *Orichalcum*. Julius Cæsar stole from the Capitol three thousand pounds of gold, and replaced it with this inferior metal. Vitellius also robbed the temples of their ornaments of gold, and replaced them with bronze.

AN ALLOY RESEMBLING STEEL. — Take 8 ounces of iron and 6 ounces of tin. This resembles steel, both in polish and hardness. A less proportion of tin makes the iron more hard and brilliant.

CRYSTALLINE GRAY ALLOY. — Take 65 parts of iron, 35 parts tin. This metal is very brittle, and may be reduced to the finest powder. Iron and tin may be alloyed in all proportions.

IMPROVED PEWTER COMPOSITIONS. — First take 6 ounces of copper, 2 ounces of zinc, 7 pounds of tin, 1 pound of lead; add the zinc last, thrust through the crust. Second, 100 parts tin, 17 parts of antimony. The French add a little copper. Third, 12 pounds of tin, 1 pound of antimony, 4 ounces of copper.

WHITE METAL. — Take 2 pounds of antimony, ½ pound of brass, and 10 ounces of tin; or 10 ounces of lead, 6 ounces of bismuth, and 4 drachms of antimony.

MOSAIC ORNAMENTAL METAL. — Equal parts of mercury, tin, and bismuth form this composition.

FLUTE VALVE-KEYS are composed of 4 ounces of lead and 2 ounces of antimony.

GERMAN TITANIUM. — Take 12 ounces of tin, 1 ounce of antimony, and 2 drachms of copper.

SPANISH TITANIUM. — Take 1 pound of antimony, ½ pound of steel or scrap iron, and 3 ounces of nitre. The iron and steel should be heated to whiteness, and the nitre and antimony added in small portions. 2 ounces of this alloy will harden 1 pound of tin.

COLUMBIA METAL. — Take 4½ pounds of tin, ½ pound of bismuth, ½ pound of antimony, and ½ pound of lead. Another is 100 pounds

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of tin, 8 pounds of antimony, 1 pound of bismuth, and 4 pounds of copper. This alloy is used for tea and coffee-pots, or other vessels which imitate silver.

BRITANNIA METAL. — Take 4 ounces of brass, 4 ounces of tin; when melted, add 4 ounces of bismuth and 4 ounces of antimony. This alloy is added to melted tin at discretion.

TYPE METAL (ORDINARY). — Take 10 pounds of lead, and when the lead is in fusion add 2 ounces of antimony. This prevents the lead from contracting, giving it also hardness.

STEREOTYPE METAL. — Take 9 pounds of lead, 2 pounds of antimony, and 1 pound of bismuth, adding the antimony and bismuth while the lead is in fusion. Some use tin instead of bismuth. This alloy is excellent, and fills the finest lines in the moulds. Many use it for small types.

FRENCH TYPE METAL. — Four fifths of lead and one fifth of regulus of antimony.

BERLIN TYPE METAL. — Take 11 pounds of antimony, 25 pounds of lead, and 5 pounds of iron. Some add tin, copper, and brass, while others use only 3 parts lead to 1 part of antimony.

GERMAN SILVER COMPOSITIONS. — 1. Take 28 parts of copper, 13 parts of zinc, 7½ parts of nickel.

2. Take 16 parts of copper, 8 parts of zinc, 3½ parts of nickel.

3. Take 16 parts of copper, 8 parts of zinc, 3½ parts of nickel.

4. Take 60 parts copper, 25 parts nickel, 20 parts zinc.

5. Take 3 parts nickel, 8 parts copper, 3½ parts zinc.

The No. 5 is a beautiful alloy, in appearance silver, a little below the standard. Many prefer it to the more expensive mixtures. All are requested not to use in manufacturing a metal inferior to this.

SPECULUM COMPOSITIONS. — 1. Take copper 32 parts, tin 15 parts, brass 1 part, silver 1 part. This is a grand metal, is very white, hard, and its powers of reflection unsurpassed. When broken, this composition should have a bright, glassy, quicksilver appearance; if too hard and of a dead white, more tin should be added. The copper will sometimes receive, if very pure, 16 parts of tin. If it appears rough and bluish, more copper or brass should be added.

2. Take 64 parts of copper, 29 parts of grain tin; fuse the metals separately under a little black flux, mixing thoroughly with wooden spatula, then pour the metal in the mould so that the face of the intended *mirror* shall be downward.

3. Take 32 parts of copper, 14 parts of tin, 2 parts of arsenic.

4. Take 32 parts of copper, 13½ parts of tin, 1½ parts of arsenic.

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5. Take 32 parts of copper, 15 parts of tin, 2 parts of arsenic. Many prefer this to receipts 3 and 4.

6. Take 32 parts of copper, 2 parts of tin, and 1 part arsenic. This is an excellent metal, but is rather of too much yellow hue when polished.

7. Take 6 parts of copper, 2 parts of tin, and 1 part of arsenic. This is Sir Isaac Newton's composition. It is very compact, but very yellow when polished.

8. Take 3 parts of copper, 1¼ parts of tin. Is compact and more white than the last.

COPPER AND WHITE ARSENIC. — In fusing copper scraps with white arsenic, for candlesticks, clock dials, buttons, figures, ornaments, etc., to give them the appearance of silver, the whole should be brought down with a flux of common salt. As this metal is very poisonous if brought in contact with food, in no case must it be used for cooking utensils. Arsenic, being fusible and brittle, is employed in shot factories, in the proportion of 1½ pounds of arsenic to 500 pounds of lead, for small shot, and 3 pounds of arsenic to 500 pounds of lead, for large shot.

WASTE OF ZINC AND TIN. — As zinc and tin will waste more in the re-fusion of metals than copper, to avoid this as much as possible, use a flux of potash and soda, mixed with charcoal, in the proportion of 2 ounces of flux to each 100 pounds of metal; should be added as soon as the mass is melted, to prevent loss of strength and brilliancy, and avoid oxidation. The sooner the metals are reduced under a good flux, and cast in the mould, the more perfect will be the work. If zinc is to be added after removing the crucible from the fire (for casting brass work), it is better to add it in the form of yellow brass.

No simple alloy of copper and zinc, or of copper and tin, works as pleasantly in turning, planing, or filing, as if combined with a very small proportion of a third fusible metal. Generally lead is used, as is understood by all metal workers.

SPANISH BELL-METAL. — Take 74 pounds of copper, 25 pounds of tin, and 1 pound of iron. Let tin-plate scraps be melted with block-tin, under a flux of nitre, and poured out when melted, together; otherwise the metals will not combine readily. The Chinese and Spaniards use this metal for their best bells.

CHINESE WHITE METALS. — 1. Take 55 parts of copper, 17 parts of zinc, 23 parts of nickel, and 3 parts of iron.

2. Take 62 parts of copper, 19 parts of zinc, 14 parts of nickel, 2½ parts of cobalt, 2½ parts of iron.

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3. Take 78 parts of copper, 4 parts of nickel, 3½ parts of zinc.

4. Take 50 parts of copper, 25 parts of zinc, 25 parts of nickel.

STRONG AND DURABLE SHIP NAILS. — Take 10 pounds of copper, 8 pounds of zinc, and 1 pound of iron.

EXPANSION METAL. — Take 9 parts of lead, 2 parts of antimony, and 1 part of bismuth.

TUTENAG. — Take 8 parts of copper, 5 parts of zinc, 3 parts of nickel.

GOVERNMENT STANDARD MEASURE OF ALLOY. — Take 576 parts of copper, 59 parts of tin, 48 parts of brass (made from 22 parts of copper, 1 part of zinc).

FENTON'S ANTI-FRICTION METAL. — 7½ parts of grain tin, 7½ parts of purified zinc, 1 part of antimony. Many prefer 9 and 10 parts of tin to 1 part copper.

A superior alloy to either of the above is, 1 part copper, 1 part regulus of antimony, 10 parts of tin. The copper should be fused first, then add the antimony, with a small portion of the tin; cover the whole with charcoal for a short time before casting, then add the balance of the tin. These alloys are used only for lining brass bearings. The following anti-friction metal can be used for casting in place of brass, when required (not used for linings): Take 85 parts of zinc, 10 parts of tin; when fused, add 5 parts of antimony. Hard metals have less friction than soft ones, and the friction of hard against hard may be generally estimated at about one sixth of the pressure.

BABBITT'S ANTI-FRICTION METAL. — Fuse copper 4 pounds, add slowly tin 12 pounds (tin should be first quality Banca), regulus of antimony 8 pounds, and while this composition is in fusion add 12 pounds more of tin. As soon as the copper is melted and 4 or 5 pounds of tin have been added, the heat should be reduced to a dull red to prevent oxidation, the remainder of the metal should then be added as above. In fusing the metal keep a small portion of powdered charcoal on the surface. This composition is named *hardening*. For linings of boxes, use 1 pound of the hardening, melted with two pounds of best Banca tin, which completes the lining metal ready for use.

NEW ALLOYS OF ZINC.

M. Fontainemoreau has lately patented in England, under his name, these several alloys, which, as a substitute for copper and bronze, and in the manufacture of machinery, is being generally adopted:

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1. Take 99½ parts of zinc, ½ part cast iron.
2. " 91½ " " 8 parts of copper, ½ part cast iron.
3. " 97 " " 3 " "
4. " 91 " " 8 " " 1 part lead.
5. " 92 " " 8 " "
6. " 97 " " 2½ " " ½ part cast iron.
7. " 90 " " 8 " " 1 part lead, 1 part cast iron.

The quantities named of any of these metals may be varied a trifle, if thereby the composition is not made too hard or soft. These alloys are of a close texture, more malleable and homogeneous than pure zinc, or some kinds of iron. They have a much finer grain and texture than zinc, are not liable to oxidation, and somewhat resemble steel, particularly when rolled. These alloys file more free than brass, zinc, or copper, not clogging the file.

If these alloys be cast in metallic moulds, their hardness and texture are improved. They receive a tempering similar and resembling to steel.

These several alloys may be rendered suitable for substitutes of bronze, copper, brass, etc. The color proper for the metals, of which they are intended as substitutes, can be given by any solution of copper. The best is said to be the hydrochlorate of copper.

1. A Bronze or a Blackish Color may be given, by use of a solution of the salt of copper, reduced with a quantity of water; a small quantity of nitric acid may be added.

2. A Copper or Red Color may be given, by adding to the solution of the salt of copper liquid ammonia, and a little acetic acid. The salt of copper may be dissolved in the liquid ammonia.

3. A Yellow, or Antique Bronze Color, may be given by several means, one of which is a solution of copper, with some acetic acid. Another, the means named for copper color, with a good proportion of liquid ammonia. Another is water acidulated with nitric acid. This produces beautiful bluish shades. This last means can, however, be only employed on the alloys which contain copper, to advantage.

By these methods of coloring, sal-ammoniac solution may be used in lieu of liquid ammonia. The proportions of each ingredient have not been given, as the shade or hue required depends upon the nature of the alloy.

These alloys may be substituted, with profit, for the various metals now in use, such as iron in the various parts of machinery: iron, copper, lead, tin, in pipes or tubes, and brass, copper, and bronze,

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in manufactories and machinery, besides for other purposes, in which more expensive metals or alloys are now used.

GOLD, SILVER, AND BRASS SOLDERS.

1. HARD SOLDER FOR GOLD may be composed from gold and copper, from gold and silver, or from gold, copper, and silver.

2. An excellent solder is proportioned from 66.6 parts of gold, 16.7 parts of silver, and 16.7 parts of copper.

3. SILVER HARD SOLDER. — Take, of equal parts, silver and brass. This is made more fusible by adding one sixteenth part of zinc.

4. Take fine silver 19 parts, copper 1 part, brass 10 parts.

5. Take 66.6 parts of silver, 30.4 parts of copper, 3.4 part of brass.

6. Take 19 dwts. of pure silver, 1 dwt. of copper, and 10 dwts. of brass.

7. BRASS SOLDER is mixed with a sixth, an eighth, and sometimes one half of zinc.

7. Take 12 pounds of copper and 11 pounds of zinc.

To prepare your solder for gold and silver, cast it first into an ingot, then flatten it between rollers, or draw it into small wire; it is then prepared for use. After this, cut it into small pieces. Now join your work together with a fine, soft wire, and with a camel's-hair pencil, dipped in borax pulverized and moistened with water, touch the point you wish to solder, placing a little solder on the points. Place the article on a large piece of charcoal, and with a blowpipe and lamp direct the flame upon the joint until the solder melts, when it is jointed.

To cleanse gold after it is soldered, heat it just red, and let it cool; then, in an earthen vessel, boil it in wine and sal-ammoniac. This makes it as clean as when new.

Silver is put through the same process, except that it must be boiled in alum water.

IRON, SOFT, AND PLUMBERS' SOLDER.

1. IRON SOLDER. — All that is required is good tough brass, with borax, applied mixed with water to the thickness of cream.

An excellent fluid for solder is, to 2 fluid ounces of muriatic acid, add small pieces of zinc until bubbles cease to rise, then add ½ teaspoonful of sal-ammoniac and 2 fluid ounces of water. By the application of this, steel or iron may be soldered without being previously tinned.

2. SOFT SOLDER. — Take of equal parts tin and lead, or a metal

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more easy of fusion is composed of tin, lead, and bismuth, in equal parts; and, easier still, is a metal formed from 2 parts of bismuth, 1 part of lead, and 1 part of tin.

In soft-soldering brass, tin foil makes a fine pincture, placed between the joints, though care must be used not to have too much heat. Before using, the foil should be moistened in a strong solution of sal-ammoniac. This solder and mode of using is most excellent for fine brass work.

3. Lead Solder. — Take 2 parts of lead, 1 part of tin. Its worth may be known by melting it, and pouring upon the table a piece size of a silver dollar: if it is good, little bright spots will arise in it. Rosin should be applied when this solder is used.

4. Plumbers' Solder. — Take 1 part of bismuth, 5 parts of lead, and 3 parts of tin. This forms a valuable composition in the arts.

In concluding this chapter, a few general remarks may not be out of place. The formation of alloys seems to depend upon the chemical affinity of the metals for each other; but, in some cases, it is wanting, as no combination takes place. Thus, Gellert states bismuth and zinc do not combine. The fusing point of a mixed metal is never at the same temperature by which its constituents melt. It is usually lower than the most fusible metal which composes the alloy.

By the term *alloy*, we mean either a natural or artificial compound, composed of two or more metals, except in the case of mercury forming one of the parts, when the composition is known as *amalgam*.

The natural alloys are of much less importance than those produced artificially. Thus, we find arsenic combined with the following metals: silver, nickel, antimony, bismuth, cobalt, and iron.

We have found also a native alloy of nickel and iron, nickel and antimony, and of nickel, cobalt, and antimony. Others may also exist, but we have no examples of native alloy, strictly speaking, being applied to useful purposes; whereas, in the artificial alloys we have shown there exist combinations of the utmost importance, both for ordinary common-life purposes and uses of manufacturing, as by uniting different metals, we gain a combination of qualities not to be obtained in any single metal.

We use platina always in a pure state, and iron, copper, zinc, and lead are most generally used pure. Gold, silver, Antimony, tin, and bismuth, as has been shown, are generally alloyed. We alloy gold, silver, and tin on account of their softness, and antimony and bismuth on account of being brittle. Gold and silver are made

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hard by alloying with copper. Copper is hardened by alloying with zinc, tin, etc.

If an alloy be formed from brittle metals, it will be brittle; those formed from ductile metals are sometimes ductile, and again are brittle. If the quantities of each metal are about equal, there are as many alloys brittle as ductile; however, if any of the metals are in excess, they are usually ductile. If we combine ductile and brittle metals, the alloys will be brittle if the brittle metal exceed, or about equal, the proportion of the ductile one; but if the ductile metal greatly exceeds the brittle metal, the compounds are generally ductile.

We have shown in this chapter that the artificial metallic alloys are of the greatest degree of utility; while the natural alloys, considered as such only, are not important bodies, meteoric iron excepted, which appears as a natural alloy of iron and nickel, which the Esquimaux use for making their knives.

CHAPTER VIII.

AMALGAMS.

In the present chapter we shall speak only of amalgams, which may be known from alloys, as mercury forms always one of the metals which compose the amalgam. We have only one native amalgam; this is found in Sweden, Hungary, etc.; it is met with either semi-fluid, massive, or crystallized in rhombic dodecahedrons. It consists of 64 parts of mercury and 36 parts of silver out of 100 parts. Nearly all the metals may be amalgamated with mercury, the combination depending on the chemical affinity.

If the cohesion of a metal is little, as with sodium and potassium, or when its affinity for mercury is great, as with silver and gold, amalgamation will occur by mere contact. On the other hand, if the cohesion of a metal is great, or its affinity for mercury but little, heat or intermediate action, and sometimes both, are required to make an amalgamation.

When 1 part of potassium is mixed with 44 parts of mercury, they combine, with the evolution of much heat; and when the amalgam so formed becomes cold, it is hard, and in appearance

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silver. If the body of mercury exceeds 100 parts to 1 of potassium, the mixture is liquid, and an amalgamation having only 1.5 per cent. of potassium is susceptible of crystallization. The density of an amalgam exceeds that of the mean of the metals which go to compose it; this and the tendency of one or both metals to oxidize, are additional indications of chemical combination.

Some metals require heat to amalgamate them. Thus antimony, to effect a combination, must be fused, and while liquid, mixed with the hot mercury. Heat alone, however, produces but little action between iron and mercury; they are amalgamated by mixing the filings of the metal with pulverized alum, and rubbing them together in a mortar, with a little warm water. After rubbing, the alum may be washed out.

By the intervention of zinc or tin, iron may be combined with mercury, forming a double amalgam. Platina will also unite with mercury by the intervention of the amalgam of potassium, but not by direct action. The double amalgam of iron and zinc does not rapidly undergo any change, and is not attracted by the magnet. All amalgams can be decomposed by a red heat, the mercury being distilled, while the more fixed metals remain. Amalgamation and decomposition are employed to separate gold and silver from the ores. The mercury obtained after decomposing the amalgams is distilled, and repeatedly used again and again, with but little loss.

Gold and silver amalgams are employed in the process of gilding and plating. The amalgam of tin is largely used in the "silvering of mirrors," and the various amalgams of zinc and tin are used for exciting electricity in the electrical machine.

AMALGAMS FOR ELECTRICAL MACHINES, ETC.

1. Fuse 1 ounce of zinc with ½ ounce of tin, at as low a temperature as possible; then add 1½ ounce of quicksilver, previously made hot; pour out, and when cold reduce it to a powder, and triturate it with sufficient quicksilver to bring it to a proper consistence.

2. Zinc 1 part, tin 1, quicksilver 2; melt together.

3. Zinc 2 parts, tin 1, mercury 5.

4. La Beaume's. — Pour into a chalked wooden box 6 ounces of quicksilver; pour into an iron ladle ½ ounce beeswax, with 2 ounces of purified zinc, and 1 ounce of grain tin; set it over a brisk fire, and when the metals are melted, pour them into the box, avoiding the dross. When cold reduce it to powder, and mix it with lard, Keep it in a box, covered with tallow, and spread it on leather for use.

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LIQUID AMALGAM FOR SILVERING GLOBES, ETC. — Pure lead 1 ounce, grain tin 1 ounce; melt in a clean ladle, and immediately add 1 ounce of bismuth. Skim off the dross, remove the ladle from the fire, and before the metal sets add 10 ounces of quicksilver. Stir together, avoiding the fumes.

AMALGAM FOR VARNISHING FIGURES. — Melt 2 ounces of tin with ½ ounce of bismuth, and add ½ ounce quicksilver. When cold, grind it with white of egg, and apply to the figure.

CHAPTER IX.

VARIOUS PREPARATIONS.

HAVING, in the several chapters which precede this, given in regular order all that is necessary for the successful and profitable working of the alloys, etc., we now lay before the reader such miscellaneous receipts as may be most useful. As before remarked, we give only the valuable and reliable.

PREPARATIONS OF SILVER.

1. Precipitate silver from its nitric solution by the immersion of polished copper plates. Of this silver take 20 grains, supertartrate of potass 2 drachms, common salt 2 drachms, and ½ drachm of alum; mix all thoroughly together.

The article to be silvered must be well cleaned. Rub some of the mixture, previously a little moistened, upon its surface, and it becomes silvered. It may be polished with a piece of soft leather.

Principally used for silvering dial plates of clocks, scales of barometers, etc.

2. SILVER IVORY. — Dip a slip of ivory in a mild solution of nitrate of silver, letting it remain until it becomes a deep yellow hue. Then remove it, and place it in a glass of clear water, and expose it in the water to the rays of the sun. After exposed thus for about four hours the ivory becomes black, which, on being burnished, becomes a beautiful silver color.

3. SILVERING POWDER, for silvering copper, covering the worn parts of plated goods, etc. Nitrate of silver 30 grains, common salt 30 grains, cream of tartar 3½ drachms; mix. Moistened with water, and rubbed on dial plates or other copper articles, it coats them with silver.

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4. Silver precipitated from its nitric solution by copper 20 grains, alum 30 grains, cream of tartar 2 drachms, salt 2 drachms.

5. Precipitated silver ½ ounce, common salt 2 ounces, muriate of ammonia 2 ounces, corrosive sublimate 1 drachm; make it into a paste with water. Copper utensils are previously boiled with tartar and alum and rubbed with this paste, then made red hot, and afterwards polished.

6. Dissolve muriate of silver in a solution of hyposulphate of soda, and mix this with prepared hartshorn or other suitable powder.

7. Nitrate of silver 1 part, cyanide of potassium 3 parts, water sufficient to form a thick paste. Apply it with a rag. A bath for the same purpose is made by dissolving 160 parts of sulphate of soda and 15 of nitrate of silver, in water, and dipping the articles to be silvered into it.

8. Excellent Preparation for Silvering Brass. — Procure half an ounce of silver or gold lace; add one ounce of double refined aqua-fortis; put them in an earthen pot, and place them over a slow fire until all is dissolved; then take from the fire and mix the contents of the pot in a pint of clear water, after which pour it into another clean vessel, to remove the grit or sediment; then add a spoonful of common salt, and the green water will at once let go of the silver particles, which will form themselves into a white curd. Then pour off the water, it being of no further use, and mix the white curd with two ounces of salt of tartar, half an ounce of whiting, and a large spoonful of common salt, more or less, according as you find it for strength. Mix all thoroughly together, and it is ready for use.

Be careful that you remove all the scratches from the brass; then rub it over with a piece of old beaver hat and rotten-stone, to clear it of all greasiness; then rub it with salt and water with your hand; then with your finger take a little of the composition above, rub it over where the salt has touched, and it will stick to the brass, and look as well as silver. After this, wash and steep it in plenty of clear cold water, to remove the aqua-fortis which may have remained in the composition; and when dried with a hot clean rag it is then ready to be varnished with the white lacquer, which is mentioned in this chapter.

BRONZING.

There are many varieties used, and the choice is a mere matter of taste. The object should be not to confine yourself to any solitary method.

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1. Bronze for Plaster Figures. — Dissolve palm soap in water, and add a mixed solution of sulphate of copper and sulphate of iron until no other precipitate occurs. Dry the precipitate, and mix it with oil of turpentine or linseed oil. Sulphate of copper alone produces too bright a green. Palmite of iron is yellow. These may be precipitated separately, and mixed to the desired shade after being triturated with the oil. 10 ounces of soap will require 3 ounces of sulphate of copper.

2. French Bronze. — Sal-ammoniac 1 ounce, cream of tartar 3 ounces, salt 6 ounces; dissolve in a pint of hot water, add 2 ounces of nitre, and 2 ounces of nitre of copper dissolved in a ½ pint of water.

3. Antique Bronze. — Salt of sorrel 1 ounce, sal-ammoniac 2 ounces, white vinegar 14 ounces. [To give an antique appearance to bronze figures, etc.]

4. Copper Bronze. — A diluted solution of muriate of platina. [For copper-binding screws, and other small articles.]

5. Medal Bronze. — A weak solution of hydro-sulphuret of ammonia, or of sulphuret of potassium. [For electrotype medals.] Immediately on removing the electrotype cast from the solution, brush it over with good black lead; then heat it moderately, and brush it over with a painting brush, the slightest moisture being used.

6. Tin Castings. — Wash them over, after being well cleaned and wiped, with a solution of 4 parts of verdigris in 11 of distilled vinegar; leave for an hour to dry, then polish with a soft brush and colcothar.

7. Chemical Bronze for Electrotype Casts. — 2 ounces of carbonate of ammonia, 1 ounce of acetate of copper; boil in half a pint of vinegar, until the vinegar is nearly evaporated. Into this, pour a solution made from 62 grains of muriate of ammonia and 15½ grains of oxalic acid, in half a pint of vinegar. Replace the vessel on the fire, allowing the contents to boil; then remove, and when cold, strain through filtering paper; preserve the liquid for use. The remaining sediment may be again treated with a second half pint of the solution. This preparation should only be applied to medals that are clean and bright.

Dirty medals may be cleaned with soft soap, rotten-stone, and water. The medal is to be rubbed with a hard brush dipped in this, care being taken not to scratch the medal. It must be washed in water, and thoroughly dried after this. When dry, the use of the plate brush and the leather will polish the medal. Medals may also be cleaned by dipping them in nitric acid, either diluted or concen-

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trated. Grease and wax may be removed by boiling in pearlash and water, or by pouring the boiling ley on the medals.

The medal should be warmed before applying the bronze; then dip a camel's-hair pencil into the liquid, and brush the surface for half a minute; immediately after, pour boiling water over it. The medal soon dries, when rub its surface lightly with soft cotton very slightly moistened in linseed oil. Gentle friction with a piece of dry cotton will finish the operation. The color given by this means is red. The tints vary, owing to circumstances. If articles thus bronzed are intended for a cabinet, they should be examined occasionally; for, if the vinegar has not been washed entirely away, they may be injured by the formation of a green powder — the acetate of copper. Should this occur, the green powder may be removed with the moist and dry cotton.

8. Bronze for Brass, etc. — Take 6 pounds of muriatic acid, add 2 pounds of oxide of iron, and 1 pound of yellow arsenic; mix all thoroughly together, and let it stand for two days, frequently shaking in the mean time, when it is fit for use.

Every article intended to be bronzed must be clean and free from grease. Immerse it in the above solution, and let it stand for three hours, or until it becomes black; then wash off the spirits, and dry it in sawdust, which is best.

As soon as the article is thoroughly dry, apply to it some wet black, the same as used for stoves; then polish it with some dry black lead and a brush; it is now ready for the lacquer.

9. Green Bronze. — Take 1 quart of strong vinegar, ½ ounce of mineral green, ½ ounce of raw umber, ½ ounce of sal-ammoniac, ½ ounce of gum arabic, 2 ounces of French berries, ½ ounce of copperas, and 3 ounces of green oats. The oats give finish, though are not essential. Dissolve the whole in an earthen vessel, adding the berries and oats, over a slow fire; let the compound boil, then allow it to cool, and strain it through a flannel; the bronze is now ready for use.

10. Plumbago Bronze. — To produce the tint in the greatest perfection, it is best to apply the bronze at once, on bringing the medal from the mould. Bright specimens are best, but all may be treated the same. Where wax moulds are used, the medal should be cleaned with pearlash or soda.

The bronzing is produced by brushing the surface with plumbago, then place the metal over a fire until too hot to be touched; when the heat is down enough to apply the plate-brush without burning, brush it over: a few strokes of the brush will give a dark-

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brown finish, approaching black, but entirely distinct from the appearance of plumbago. If the medal is kept some days, and the same operation gone through, or upon one which has been polished, it gives a different but very beautiful tint, the color being between a brown and red. Some prefer this to the true dark brown.

11. BRONZE OF CARBONATE OF IRON. — Most elegant tints can be secured by use of rouge or plate powder. First moisten it with water, when you will apply and treat it in the same manner as with the plumbago bronze.

LACQUERING.

Lacquers are used upon polished surfaces of metals, glass, wood, etc. As they are used in different shades and depths, it is advisable to keep a concentrated solution of the different coloring ingredients always ready, that any tint desired may be produced.

1. LACQUER, GOLD. — Procure a clean tin, holding four gallons. Put into this 1 pound of ground turmeric, 1½ ounces of powdered gamboge, 3½ ounces of powdered gum sandarach, ¾ of a pound of shellac, and 2 gallons of spirits of wine. After agitating, dissolved and strained, add 1 pint of turpentine varnish, mixing well.

2. LACQUER, RED. — To 2 gallons of spirits of wine add 1 pound of dragon's blood, 3 pounds of Spanish anatto, 3½ pounds of gum sandarach, and 2 pints of turpentine varnish, made up same as No. 1.

3. LACQUER, BRASS. — To 2 gallons of spirits of wine, add 3 ounces of cape aloes, cut fine, 1 pound of fine pale shellac, 1 ounce of gamboge cut fine: add no turpentine varnish. Made up same as No. 1. This gives a pale brass shade.

Those who wish a particular tint of some of the component ingredients, should keep a 4-ounce phial of a strong solution of each ingredient, then any tint desired can be had instantly.

4. LACQUER, TIN. — Take of strongest alcohol 4 ounces, 2 ounces of powdered turmeric, 1 scruple hay saffron, 2 scruples powdered dragon's blood, ½ scruple red saunders. Infuse this mixture in the cold for two days — 48 hours: pour off the clear, straining the rest; then add ½ ounce of powdered shellac, 1 drachm of sandarach, 1 drachm of mastic, and 1 drachm of Canada balsam. Dissolve this in the cold by frequent shaking, laying the bottle on its side to give a greater surface to the alcohol. When dissolved, add 40 drops of spirits of turpentine.

5. LACQUER, DEEP GOLD. — Take 4 ounces of strongest alcohol, 8 grains of Spanish anatto, 2 drachms of powdered turmeric, 12 grains of red saunders. Infuse, and add shellac, etc., as to No. 4. When dissolved, add about 30 drops of spirits of turpentine.

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Lacquer should always stand until it becomes quite fine, which gives it a more desirable finish.

6. LACQUER, WHITE. — Take 1 pint of highly rectified spirits of wine; divide this into 4 parts. Mix 1 part with ½ ounce of gum mastic, in a phial alone. In another part of the spirits placed in a phial, mix ½ an ounce of gum sandarach. In another part mix ½ an ounce of the whitest part of gum benjamin. Then mix all parts together, and temper to suit. No exact rule can be given unless the quality of the gums and spirits are known beyond a doubt. A very small piece of Venice turpentine or white rosin may be added to the mastic phial if wished; it assists in giving a fine gloss. If the varnish is strong and thick, add clear spirits; if too hard, pour from the mastic bottle; if too soft, pour a little from the sandarach or benjamin. When you have got all to a proper temper for use, warm the plate on a hot heater, and with a camel's-hair brush, dipped in the lacquer, stroke it quickly until no shades appear.

VARNISHES.

1. VARNISH FOR DRAWINGS. — Take 1 ounce of Canada balsam, 2 ounces of oil turpentine; dissolve. Size the drawings first with a jelly of isinglass, and when dry apply the varnish. When used on drawings with colors it gives them the appearance of oil paintings.

2. COPAL VARNISH FOR JAPANNERS. — Take 7 pounds of the best pale African copal, add 2 quarts of clarified linseed oil. Boil for one quarter of an hour, remove it into the open air, and add 3 gallons of boiling oil of turpentine; mix well, then strain into the cistern, and cover up immediately.

3. CALLOT'S SOFT ETCHING VARNISH. — Take 4 ounces of linseed oil, ½ ounce of gum benzoin, and ½ ounce of white wax. Boil down to two thirds.

4. DANE'S ETCHING VARNISH. — Take 2 ounces of white wax, ½ ounce of Burgundy pitch, and ½ ounce of black pitch; melt all together, adding slowly 2 ounces of powdered asphaltum. Then boil until a drop taken out on a plate will break when cold, by being bent double several times between the fingers, when it must be poured into warm water, and made into small balls for use.

5. HARD ETCHING VARNISH. — Take 4 ounces of linseed oil, and 4 ounces of mastic; melt together.

6. PLIABLE VARNISH, EXCELLENT FOR BALLOONS, ETC. — Take 1 ounce of India rubber shavings, 2 pounds of mineral naphtha; digest at a low heat, in a close vessel, until dissolved; then strain.

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7. Brilliant French Polish. — Take 1 ounce of gum mastic, 1 ounce of gum sandarach; add these to 2½ pints of spirits of wine, then add 3 ounces of shellac. This operation may be accomplished by putting the ingredients in a loosely corked bottle, and then placing the bottle in a vessel of water a little below 173° Fahrenheit, or the boiling point of spirits of wine, until the solution be effected.

8. Brunswick Black. — Take 45 pounds of foreign asphaltum, 6 gallons of drying oil, and 6 pounds of litharge. Boil for two hours; then add 8 pounds of dark gum amber (fused); 2 gallons of hot linseed oil. Boil for another two hours, or until a little of the mass, when cold, will roll into pills. Then remove the heat, and afterwards thin down with 25 gallons of oil of turpentine. Excellent for iron work, etc.

9. Mordant Varnish, No. 1. — Take 1 ounce of sandarach, 1 ounce of mastic, ½ ounce of gum gamboge, and ¼ ounce of turpentine. Dissolve all, when mixed, in 6 ounces of spirits of turpentine.

10. Mordant Varnish, No. 2. — Put in a pan a quantity of boiled oil; bring it in contact with a strong heat. When a disengagement of black smoke occurs, set it on fire, and in a few minutes place a cover over the pan and extinguish the fire. Then pour the compound, while heated, into a bottle previously warmed, and add to it a little oil of turpentine.

11. Mordant Varnish, No. 3. — Take a quantity of camphorated copal varnish; add a little red lead.

12. Mordant Varnish, No. 4. — Mix drying oil and asphalt, reduced with oil of turpentine. Excellent for very pale gilding, or bronzing.

13. Mordant Varnish, No. 5. — Dissolve a little honey in thick glue. Used for gilding, etc.

14. Best Green Transparent Varnish. — Grind a small body of Chinese blue with about double the amount of finely-powdered chromate of potash, and a sufficient quantity of copal varnish thinned with turpentine. This compound needs the most thorough mixing and grinding, or it will not be transparent, in consequence will be useless for the purposes desired. The tints or tone may be changed by using more or less of one or the other of the ingredients. If most chromate of potash is used, there will be a yellow shade in the green; and the reverse, if the blue be out of proportion. This varnish has a striking effect on japanned wares, paper hangings, etc. It gives a fine glittering appearance to gilt or other decorated work. The cost of making this varnish is but little.

15. Varnish for Iron. — The best varnish is red lead, laid on

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first with a thin coat, dry; then apply one or more coats. For polished iron, use common gum copal varnish, mixed with a little oil.

THE ART OF JAPANNING.

The person should have handy brown varnish, turpentine varnish, white hard varnish, Japan gold size, and spirits of turpentine. These may be kept in separate bottles until wanted for use.

The next lot of goods required are flake white, vermilion, red lead, lake, Prussian blue, kings and patent yellow, orpiment, spruce and brown ochre, mineral green, lampblack, verditer, and burnt umber.

The person having provided the articles named above, must now provide a small muller and stone, in order to grind any required color.

All wood work must be prepared with size, and some more coarse material mixed with it, so that the grain may be hardened and filled up. The size should be in color that which will best suit the color which is to be laid on. The size must be rubbed smooth with glass paper when dry. It is seldom necessary to re-size, but in case of serious accident the damaged places may be re-sized.

With the colors named above you can match any color used for japanning, being careful to grind your colors smooth in spirits of turpentine; add a small quantity of spirit varnish and turpentine, and lay it on carefully with camel's-hair brush; then varnish with white or brown spirit varnish, according to color.

If black is wanted, mix a little size and lampblack. This has a good gloss, and need not be varnished.

If imitation of black rosewood is wanted, a black ground must be given to the wood, after which take some finely levigated red lead, mix as before directed, and put on with a flat stiff brush, in imitation of the rosewood streaks. After this take a small portion of lake, ground fine, and mixed with brown spirit varnish, observing not to have more color in it than will just tinge the varnish. If on trial it proves too red, you may assist it with a little umber, ground very fine, with which pass over the whole of the work intended to imitate black rosewood, and it will have the desired result. If the workmanship is good, and the rules above observed, it will, when varnished and polished, be difficult to distinguish it from the genuine rosewood.

WRITING INKS.

RUNGE'S BLACK WRITING FLUID. — Boiled logwood 22 pounds, in enough water to yield 14 gallons of decoction. To 1000 parts of this decoction, when cold, add 1 part of chromate of potash.

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The mixture is to be well stirred. The proportions are to be carefully observed, and the yellow chromate, not the bichromate, employed. (This ink is said to possess some great advantages: to adhere strongly to paper, so that it can neither be washed off by water, nor even altered by weak acids; to form no deposit; and not to be in the least acted upon by steel pens.) Steel pens should be washed in an alkaline solution before being used with this ink.

Red Writing Ink. — Best ground Brazil wood 4 ounces, diluted acetic acid 1 pint, alum ½ ounce. Boil them slowly in a covered tin, copper or enamelled saucepan, for an hour; strain, and add 1 ounce gum. Some direct the Brazil wood to infuse for two or three days before boiling.

Yellow Ink. — Gamboge triturated with water, and a little alum added.

Green Ink. — Rub 3½ drachms of Prussian blue, and 3 drachms of gamboge, with 2 ounces of mucilage, and add ½ pint of water.

Gold and Silver Ink. — Fine bronze powder, or gold or silver leaf, ground with a little sulphate of potash, and washed from the salt, is mixed with water and a sufficient quantity of gum.

Ink for Writing on Zinc Labels (Horticultural Ink). — 1. Dissolve 100 grains of chloride of platinum in a pint of water. A little mucilage and lampblack may be added.

2. Sal-ammoniac 1 drachm, verdigris 1 drachm, lampblack ½ drachm, water 10 drachms; mix.

Ink for Writing on Steel or Tin Plate or Sheet Zinc. — Mix 1 ounce of powdered sulphate of copper and ½ ounce of powdered sal-ammoniac with 2 ounces of diluted acetic acid, adding lampblack or vermilion.

Sympathetic or Secret Inks. — The solutions used should be so nearly colorless that the writing cannot be seen till the agent is applied to render it visible.

1. Boil oxide of cobalt in acetic acid. If a little common salt be added, the writing becomes green when heated; but with nitre, it becomes a pale rose-color.

2. A solution of acetate of lead. Colorless, but becomes brown when exposed to sulphuretted hydrogen gas.

3. A weak solution of sulphate of copper. The writing becomes blue when exposed to the vapor of ammonia.

Ink for Writing in Relief on Zinc. — Take 1 part of bichloride of platinum, 1 part of gum arabic, and 10 parts of distilled water. The letters traced upon zinc with this solution turn black at once. The black characters resist the action of weak acids, of

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rain, and of the elements in general. This liquid is adapted to making of signs, labels, or tags, which are liable to exposure. To bring out the letters in relief, immerse the zinc tag in a weak acid for a few moments. The writing is not injured, but the metal is eaten away.

INDELIBLE INK. — One inch of a stick of nitrate of silver dissolved in a little water, and then stirred into 1 gallon common ink. Bottle in small phials.

ETCHING FLUIDS.

1. FOR LITHOGRAPHY. — Dissolve 3 ounces of fused chloride of calcium in 9½ ounces of water, add to the solution 2 ounces of gum arabic, and 1 ounce of pure hydrochloric acid. — *Chevallier.*

2. FOR COPPER. — Aqua-fortis 2 ounces, water 5 ounces; mix.

3. Iodine 2 parts, iodine of potassium 5 parts, water 5 to 8 parts.

4. CALLOT'S EAU FORTE, FOR FINE TOUCHES. — Dissolve 4 parts each of verdigris, alum, sea-salt, and sal-ammoniac in 8 parts of vinegar; add 16 parts of water, boil for a miuute, and let it cool.

5. FOR STEEL. — Iodine 1 ounce, iron filings ½ drachm, water 4 ounces; digest till the iron is dissolved.

6. Pyroligneous acid 4 parts by measure, alcohol 1 part; mix, and add 1 part of double aqua-fortis. Apply it from 1½ to 15 minutes.

7. FOR WRITING ON STEEL. — Sulphate of copper 1 ounce, sal-ammoniac ½ ounce. Pulverize separately, adding a little vermilion to color it, and mix with 1½ ounce of vinegar. Rub the steel with soft soap, and write with a clean hard pen, without a slit, dipped in the mixture.

ACIDS FOR WORKING GALVANIC BATTERIES.

1. FOR TROUGHS FOR GENERAL PURPOSES MEDICAL GALVANISM, ETC. — Nitric acid 1 fluid ounce, sulphuric acid 1½ fluid ounce, water 4 pints.

2. DR. FARADAY. — Oil of vitriol 2 fluid ounces, nitric acid 1 fluid ounce, water 5 pints. It should be tried by dipping into it a piece of sheet zinc. A continuous succession of small bubbles should be produced.

3. FOR MR. SMEE'S BATTERY. — One measure of sulphuric acid to 7 of water. The intensity of its action is increased by the addition of a few drops of nitric acid, but this tends to destroy the plates. In electro-metallurgy the water should only contain a sixteenth of sulphuric acid.

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4. For Mr. Grove's Battery. — For the outer vessel, 1 part of sulphuric acid to 7 of water; for the inner, concentrated nitric acid.

5. For Daniell's Battery. — For the porous tube containing the zinc, 1 part of sulphuric acid with 10 of water. For the outer cylinder, a saturated solution of sulphate of copper, with a tenth part of sulphuric acid.

6. Nitro-Sulphuric Acid, for Dr. T. Wright's Batteries. — Nitric acid 1 part, sulphuric acid 5 parts. The zinc plate is immersed in a solution of muriate of ammonia or of salt, the platinized zinc in the above acid. The platinizing requires to be repeated every time the plate is washed.

CEMENTS.

1. Keller's Cement. — Mix ground white lead with as much finely-powdered red lead as will make it of the consistence of soft putty; it is now ready for use.

2. Keller's Armenian Cement for Glass, China, etc. — Soak 2 drachms of cut isinglass in 2 ounces of water for 24 hours; boil to 1 ounce, add 1 ounce of spirit of wine, and strain through linen. Mix this, while hot, with a solution of 1 drachm of mastic in 1 ounce of rectified spirit, and triturate with ½ drachm powdered gum ammoniac, till perfectly homogeneous.

3. Dr. Ure's Diamond Cement. — Isinglass 1 ounce, distilled water 6 ounces, boil to three ounces, and add 1½ ounces of rectified spirit. Boil for a minute or two, strain, and add, while hot, first ½ ounce of a milky emulsion of ammoniac, and then 5 drachms of tincture of mastic. [There are various kinds of this cement sold, and some of the improvements introduced by peculiar makers have not been made public.]

4. Coppersmiths' Cement. — Powdered quicklime mixed with bullock's blood, and applied immediately,

5. Engineers' Cement. — Equal weights of red and white lead, with drying oil, spread on tow or canvas. For metallic joints, or to unite large stones in cisterns, etc.

6. Cement for Steam Pipes. — Good linseed-oil varnish ground with equal weights of white lead, oxide of manganese, and pipe-clay.

7. Iron Cement, for closing the Joints of Iron Pipes. — Iron borings, coarsely powdered, 5 pounds, powdered sal-ammoniac 2 ounces, sulphur 1 ounce, water sufficient to moisten it. It quickly hardens; but if time can be allowed, it sets more firmly without the sulphur. It must be used as soon as mixed, and rammed tightly into the joints.

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8. GAD'S HYDRAULIC CEMENT. — Powdered clay 3 pounds, oxide of iron 1 pound, boiled oil to form a stiff paste.

9. CEMENTS FOR MASONRY OF CHAMBERS OF CHLORINE, ETC. — Equal parts of pitch, rosin, and plaster of Paris.

10. FIRE AND WATER CEMENT. — Take of milk and vinegar each half a pint, separate the curds from the whey, and mix the latter with the whites of five eggs, well beaten up. As soon as thoroughly incorporated, add to them quicklime, which has passed through a sieve; make all into a thick paste, like putty. This will resist both fire and water, and has been used to close openings in boilers, etc., never needing repairing.

GLAZES.

1. Common earthenware is glazed with a composition containing lead, on which account it is unfit for many pharmaceutical purposes. The following glaze has been proposed, among others, as a substitute: 100 parts of washed sand, 80 of purified potash, 10 of nitre, and 20 of slaked lime; all well mixed, and heated in a black-lead crucible, in a reverberatory furnace, till the mass flows into a clear glass. It is then to be reduced to powder. The goods to be slightly burnt, placed under water, and sprinkled with the powder.

2. GLAZE FOR PORCELAIN. — Feldspar 27 parts, borax 18, Lynn sand 4, nitre 3, soda 3, Cornwall china clay 3 parts. Melt together to form a frith, and reduce it to a powder, with 3 parts of calcined borax. — *Rose.*

GLUES.

1. WATER-PROOF LIQUID GLUE. — Dissolve a quarter of a pound of shellac in three ounces of naphtha. The shellac may first be placed in a wide-mouth bottle, and the naphtha poured upon it; stir the mixture each time before using. Is fit for use in two days. This makes an excellent water-proof covering, and requires no heating.

2. PORTABLE GLUE. — Take 1 pound of the best Russian glue, boil, and strain; then add ½ a pound of brown sugar, and boil thick. When cold, this mixture can be poured into small moulds, and afterwards cut into pieces. This glue is excellent for artists and architects in fixing their drawing paper on the board, the glue being very soluble in warm water.

FURNITURE OILS.

1. Linseed oil a pint, alkanet ½ ounce, digest in a warm place till colored, and strain.

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2. The same with ¼ pint of oil of turpentine.

3. Linseed oil 1 pint, alkanet root 1 ounce, rose pink 1 ounce; let them stand in an earthen vessel all night.

4. A quart of linseed oil, 6 ounces of distilled vinegar, 3 ounces of spirit of turpentine, 1 ounce of muriatic acid, and 2 ounces of spirit of wine.

5. Linseed oil 8 ounces, vinegar 4 ounces, oil of turpentine, mucilage, rectified spirit, each ½ ounce, butter of antimony ¼ ounce, muriatic acid 1 ounce; mix.

6. Linseed oil 16 ounces, black rosin 4 ounces, vinegar 4 ounces, rectified spirit 3 ounces, butter of antimony 1 ounce, spirit of salts 2 ounces; melt the rosin, add the oil, take it off the fire, and stir in the vinegar; let it boil for a few minutes, stirring it; when cool, put it into a bottle, add the other ingredients, shaking all together. [The last two are especially used for reviving French polish.]

POLISHING POWDERS.

1. FRENCH PLATE POWDER. — Mix 1 part of jewellers' rouge with 12 of carbonate of magnesia, to polish metals.

2. RAG POLISH. — Finely prepared chalk, or burnt hartshorn. One way in which these are used is to boil them with water, with pieces of rag; the finer particles are entangled in the fibres of the rags, which are dried and kept for use.

ZINCING COPPER AND BRASS VESSELS.

These may be coated with a firmly adherent layer of pure zinc, by boiling them in contact with a solution of chloride of zinc, pure zinc turnings being present at the same time in considerable excess. This may also be accomplished by zinc and a solution of sal-ammoniac or caustic potassa.

TINNING IRON.

First clean the metal to be tinned. If new work, clean with diluted sulphuric acid; then scour with sand, and clean in clear water. If the metal to be tinned is old, muriatic acid and water should be used.

The metal should now be placed on the fire, and sufficient heat applied to melt the tin. If too much heat is applied, it will spoil the article. The article to be tinned must be rubbed well with a piece of sal-ammoniac, placed between two wires; also some powder sprinkled over it, to prevent the metal from oxidating. Apply the tin, wipe it over with a piece of tow, and the work is complete.

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TINNING BRASS OR COPPER.

Iron, cast, may be tinned with a solution of tin, such as muriate of tin, mixed with an equal part of sal-ammoniac; if brushed over the metal, will highly further the tinning; i. e., make a solution of tin, by dissolving oxide of tin, in potash ley, adding to the solution some tin shavings or filings. Make this as hot as possible; place in your brass or copper, and in a few seconds you will have them nicely tinned.

COATING SMALL ARTICLES, NAILS, ETC., WITH TIN.

Take ½ ounce of powdered tin (can be had of any practical chemist), place it in a common Florence flask; pour on to this about 2 ounces of concentrated muriatic acid, and boil over a spirit lamp, until the tin is all dissolved. When cool, pour into any convenient vessel, and dilute with about an equal bulk of pure water. Drop in any small article to be tinned, holding the vessel so that they may all fall to one side. Immerse a piece of sheet copper into the solution, as far apart from the nails as possible, and connect it with the latter by means of a piece of copper wire. This arrangement makes a current of voltaic electricity, which produces a rapid decomposition of the fluid, and the deposition of tin on the surface of the small articles, nails, etc. In an hour the articles will have a thick coating of the tin, and can then be removed from the liquid, dried and polished. Steel pens are frequently subjected to this operation, to coat their nibs, which prevents their rusting. It is said to succeed better than by any other method.

GILDING AND BLUING STEEL.

Take a solution of the muriate of gold, to which add about as much sulphuric ether. The ether brings the gold to a metallic state, keeping it in solution, while the muriatic acid separates, deprived of its gold, and forms a distinct fluid. Put the steel into the ether, which speedily evaporates, depositing a coat of gold on the metal, by the simple power of attraction between them. After the steel has been gilded, dip it in cold water, and apply the burnisher, which strengthens its adhesion. Flowers, figures, and ornaments of all descriptions may be drawn on steel by using the ether with pen, or fine camel-hair pencil.

Bluing steel is accomplished by simply heating. The blue is produced by a temperature of 550° Fahrenheit, the full blue at 500° Fahrenheit, the dark blue 600° Fahrenheit.

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TEMPERING STEEL.

To harden this metal after being heated, we have simply to plunge it in cold water, the colder the water the more hard and brittle is the steel rendered. To temper requires practical experience, which any blacksmith will freely impart.

Case-hardening is the conversion of surface iron into steel, simply by heating it in contact with animal carbon, in close vessels. Bar iron becomes steel in the same manner, excepting that it is imbedded in powdered charcoal.

ATTACHING METALS TO GLASS.

Take 2 ounces of a thick solution of glue; mix with 1 ounce of linseed oil varnish, or ¾ ounce of Venice turpentine. Boil and agitate until the mixture is thoroughly incorporated. After using this cement the pieces must be fastened together for from forty-eight to sixty hours.

MIXTURE TO PRESERVE METALS FROM RUST, ETC.

Mix some oil with caoutchouc; melt it in a close vessel, stirring to prevent burning. A high temperature will be needed. This will form a perfect air-proof skin over the surface, and may at any time be removed by brushing over with warm oil of turpentine.

Metals may be prevented from corroding by dipping the article first into a very diluted nitric acid, to immerse them afterwards in linseed oil, and to allow the excess of oil to drain off. This will prevent all rust or oxidation.

BROWNING FOR GUN BARRELS.

Take nitric acid ½ ounce, sweet spirits of nitre ½ ounce, blue vitriol 2 ounces, tincture of steel 1 ounce; mix all together in 8 gills of water. Apply this preparation with a sponge, then heat the barrel a little, and move the oxide with a hard brush. You may repeat this operation three or four times, until you have the brown desired.

It must then be wiped carefully and sponged with boiling water, in which has been put a small quantity of potass. The barrel, after taking from the water, must be made perfectly dry, and then rubbed smooth with a burnisher of hard wood; afterwards heated to the height of boiling water, and the following coating applied:

Take 2 parts spirits of wine, 3 drachms of powdered dragon's

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blood, 1 ounce of shellac bruised; dissolve all together. Lay the varnish on the barrel, letting it remain until perfectly dry; then rub with a burnisher until smooth and glossy.

GOLD ETHEREAL SOLUTION.

Take pure gold and saturate with nitro-hydrochloric acid, crystallize, and with the crystals saturate water. Shake this aqueous solution in a phial with an equal volume of pure ether; then two fluids will result, the lighter of which is the gold ethereal solution, and is easily separated. This must be kept in a darkened bottle, as by exposure to light it decomposes, flakes of gold being deposited. Any substance moistened with this will receive a coating of gold. Thus metals may be preserved from corrosion.

This solution cannot be preserved long even in the dark, as it undergoes slow decomposition.

NIELLO-METALLIC ORNAMENTS.

Spread over the object to be ornamented an etching ground similar to that used by copper-plate engravers; draw the design with a needle, and etch it by means of a corrosive acid; then carefully remove the etching surface with oil of turpentine, or ether, after which wash the object clean, and set for a moment with a weak acid. Place it now in a galvanic-plastic machine, and let it remain until all the lines which have been etched are completely filled up, and the deposit is equally as high or higher than the plain surface of the object; then remove from the machine, and grind or plane off the surface until brought to the same level with the metal of the object, leaving the etched lines and cavities filled.

The metal of the object to be ornamented, and the metallic deposit, must of course be different. This means produces a beautiful effect, and with but little trouble or expense.

TO TRANSFER DAGUERREAN LIKENESSES, ETC.

Procure a first-class galvanic battery. Suspend the picture from which a copy is to be taken in a large tumbler of sulphate of copper. Let the copper wire, on which you suspend the picture, be attached to the negative pole of the battery. The wire from the positive pole must enter the solution in the tumbler and dip down into it half an inch, and about two inches from the picture. Set the machine to work, and in a few hours you will have a covering over the face, the *fac-simile* of the picture in copper. When sufficient covering

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has been deposited, remove it from the solution and wire of the battery, and wash it off. Now cut off from the edge of the picture a narrow strip; then remove from the face the covering of copper, which is readily accomplished by peeling it off with a penknife, and on this thin sheet you will have the exact copy of the original picture.

SOLUBLE GLASS.

This is a compound of the utmost importance, and is used as a covering for wood, metal, and other practical purposes. Take 15 parts of powdered quartz, 10 parts of potash, and 1 part of charcoal; melt these together, worked in cold water, and then boiled with 5 parts of water, in which it entirely dissolves. It is then applied to any required substance. As it becomes cool it gelatinizes, and dries into a transparent, colorless glass, on the surface of anything to which it has been applied. It makes wood almost incombustible.

HOW ONE OR MORE LETTERS MAY BE WRITTEN.

PAPER, COPYING. — Mix lard with black lead or lampblack, into a stiff paste, rub it over writing paper with flannel, and wipe off the superfluous quantity with a soft rag. These sheets alternated with writing paper, and written on with a solid pen, produce two or three copies of a letter at once.

TRACING PAPER.

Take 6 ounces of spirits of turpentine (by weight), 1 ounce of rosin, and 1 ounce of boiled nut-oil. Lay this on the paper with either a sponge or a brush. When dry it is complete for use.

PAPIER-MACHE. — A plastic material, formed of cuttings of white or brown paper, boiled in water, and beaten to a paste in a mortar, and then mixed with a solution of gum arabic in size, to give tenacity. It is variously manufactured by being pressed into oiled moulds, afterwards dried, covered with a mixture of size and lampblack, and varnished.

PREPARATION FOR FIXING DRAWINGS.

Take 10 parts of gum lac, and dissolve it in 120 parts of alcohol. This liquid must afterwards be bleached with animal charcoal.

Another equally as good receipt is the ready-made paint to be had at the color stores, containing a sixth of white lac, and adding two

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thirds of spirits of wine rectified. After it has been filtered it is ready for use; and we have only to spread a layer of either of these solutions at the back of the drawings, in order to permanently fix them. By this process the spirits rapidly evaporate, and in an instant all the light dust from the chalk and crayons, which resembles that on the wings of the butterfly, adheres so firmly to the paper that the drawings may be rubbed and carried about without any injury whatever.

TO SHAPE IVORY.

Take ½ pound of mandrake, sliced, and put into a quart of the best vinegar; into this place the ivory. Keep it in a warm place for two days, at end of which time you can bend the ivory into any required shape.

TO PRESERVE GUM SOLUTIONS.

Add a few drops of alcohol, or any essential oil, and it will preserve a quart of the mucilage of gum arabic, or gum tragacanth, from spoiling. A little alum dissolved will preserve flour paste.

FROSTING SOLUTION.

The metal is plunged into a solution of caustic potash. The surface becoming frosted does not tarnish on exposure to the air. — *Macadam.*

DAGUERREOTYPE PLATES.

These are prepared by cleaning and polishing the silver surface, exposing it to the vapor of dry iodine, or tincture of iodine, or iodide of bromine, or bromide of lime. After having the image thrown on them, they are exposed to the vapor of mercury. But the manipulations and precautions necessary to the success of the operation are too numerous to detail here.

MOIRE METALLIQUE.

A method of ornamenting the surface of tin plate by acids. The plates are washed with an alkaline solution, then in water, heated, and sponged or sprinkled with the acid solution. The appearance varies with the degree of heat and the nature and strength of the acids employed. The plates, after the application of the acids, are plunged into water slightly acidulated, dried, and covered with

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white or colored varnishes. The following are some of the acid mixtures used: Nitro-muriatic acid, in different degrees of dilution; sulphuric acid, with 5 parts of water; 1 part of sulphuric acid, 2 of muriatic acid, and 8 of water; a strong solution of citric acid; 1 part nitric acid, 2 sulphuric, and 18 of water. Solution of potash is also used.

COPPER SOLUTION.

Take 4 ounces of pure sulphate of copper; add to this 1 pint of filtered rain water. When dissolved, can be used with a battery, or will coat metal articles by simply introducing them into the solution.

CHAPTER X.

SECRETS OF TRANSMUTATION.

In concluding Metallurgy, we have reserved for this, the last chapter, the most important receipts, and mass of valuable knowledge, ever before brought together, the value of which cannot be estimated by dollars. The amount of profitable employment furnished to those who are engaged in the working of these combinations can never be correctly known. The receipts, etc., are given in order as below. The reader's careful attention is respectfully asked.

COMBINATIONS FOR SILVER, ETC.

1. Queen's Silver. — This is composed of 9 parts of tin, 1 part of antimony, 1 part of lead, and 1 part of bismuth. This alloy has great metallic lustre, and is of general utility.

2. Silver Metal. — Take 50 parts of tin, 4 parts of antimony, ½ part of bismuth, and 2 parts of copper. This is a very fine silvery-looking metal, and liable to deceive even judges.

3. Deception Silver. — This alloy is made from 2¾ pounds of tin, ¼ pound of bismuth, ¼ pound of antimony, and ¼ pound of lead. This composition retains its silvery brilliancy to the last, and is in general use.

4. French Silver. — One of the French imitations is composed of 5 ounces of lead, 3 ounces of bismuth, 2 drachms of antimony, 4

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ounces of brass, and 5 ounces of pure grain tin; all to be fused together. This alloy may be moulded and hammered into any required shape. It is used principally for spoons, castors, and, in short, for any article which is formed from a malleable alloy.

5. AMERICAN SILVER. — Take 1½ ounces of silver, ½ of an ounce of copper, 1 ounce of brass, ½ ounce of bismuth, 1 ounce of saltpetre, 1 ounce of common salt, ½ ounce of arsenic, and ½ ounce of potash. A little borax may be added while fusing. This receipt gives a most excellent imitation, in fact is claimed by many to be beyond detection when properly made. It is used for all the purposes to which silver is applied, and is a dangerous metal in the hands of the dishonest. Persons buying from strangers goods claimed to be solid silver, should be on the lookout for imitations from all of the receipts here named.

6. JAPANESE SILVER. — This is made by taking ¼ ounce of pure mercury, and dissolving in 2 ounces of nitric acid. Then add 1 pint of rain water. In another vessel have 1 quart of strong vinegar, to which add 1 pound of common salt. Now melt 1 pound of pure grain tin. When fused, pour it into the one vessel; then refuse and pour it into the other vessel, and thus continue fusing and pouring, first in one vessel, and then the other, until it becomes so beautifully pure and white as to look and be exactly like pure silver. Much care must be used while pouring melted metals into liquids, as the steam arising, and the liquid sputtering, will burn the person if exposed. This, like all other receipts here given, makes an excellent metal, and can be used for the same purposes for which silver is applied.

7. SILVER-PLATE AND MEDAL ALLOY. — This is composed of 95 parts of pure silver and 5 parts of pure copper.

8. SILVER SOLUTION. — This solution is used for plating with galvanic batteries. To make this, provide a glass vessel, put in this vessel 1 ounce of best nitric acid, then put into the acid a 50-cent, a 10-cent, and a 3-cent silver piece; let them remain in the acid until dissolved. Then precipitate the silver with a strong solution of salt; then pour off the acid, and wash the precipitate five or six times with water; after which, add to the precipitate 1½ ounces of cyanide of potash, dissolved first in 2 gills of water. This solution of potash should be poured on the precipitate, a little at a time, and decanted off. Repeat this several times, until all the precipitate is dissolved; then add to the solution 1 quart of filtered rain water. It is now ready for use. Avoid all fumes arising while making this solution.

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COMBINATIONS FOR GOLD, ETC.

1. MANHEIM GOLD is composed from 3 parts of copper, 1 part of zinc, and a small portion of tin. If these metals are pure, and melted in a covered crucible containing charcoal, the alloy has a very close resemblance to gold, and is liable to deceive excellent judges.

2. BEST PINCHBECK GOLD. — This is made of 5 parts of pure copper and 1 part of pure zinc. This alloy is used for cheap jewelry, and is an excellent imitation when highly polished.

3. MOSAIC GOLD. — Take of copper and zinc equal parts; mix them together at the lowest temperature at which copper will fuse, and stir until a perfect mixture of the metals is effected. Then add gradually small portions of zinc at a time, until the alloy acquires a proper color, which is perfectly white while in a melted state. It should then be immediately cast into figured moulds. This alloy should contain from fifty-three to fifty-five per cent. of zinc. This mixture can be used for all the purposes to which gold is applied.

4. PEKIN GOLD. — Take 4 parts of platina, 2 parts of silver, and 6 parts of copper; fuse thoroughly in a covered crucible, in contact with powdered charcoal. When this combination is made properly, and pure metals used, it is claimed by many to be equal to pure virgin gold. This combination is much used by jewellers, and will receive any shape or design.

5. IMPROVED AMERICAN GOLD. — Take 8 ounces of virgin platina, 3½ ounces of copper, and ½ ounce of zinc. Place in a crucible, cover the whole with powdered charcoal, and fuse until all is thoroughly incorporated. This combination gives an extraordinary alloy, equal to the Pekin gold, and is used for any of the many purposes to which gold is now applied.

6. TRINKET COMPOSITION. — This is made from 75 parts of gold, 25 parts of copper, and a little silver.

7. GOLD COIN OF AMERICA. — The standard alloy of American gold coin is 90 parts of gold, 2.5 parts of silver, and 7.5 parts of copper.

8. BRITTLE GOLD. — To make gold brittle we have simply to add ½ grain of lead to 1 ounce of gold. As neither gold nor lead are brittle metals, this is a strange result.

9. GOLD SOLUTION. — This solution is to be used in connection with a galvanic battery. It is made as follows: Procure a glass vessel; into this put 2 drachms of cyanide of potash; then add ½ pint of filtered rain water. As soon as dissolved, into this solution introduce a sheet of thin pure gold foil, weighing about 6 grains This foil should be rolled up loosely, and attached to the end of a

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wire having connection with the positive pole of a galvanic battery. A wire similar, having connection with the negative pole of the same battery, should be introduced into the solution where the gold is, dipping down about one fourth of an inch into the solution. Now set the battery to work, and at once the decomposition of the gold will commence. It will require several hours to dissolve the gold. You can at any time judge of the richness of the solution by attaching a clean piece of silver to the negative pole of the battery. The silver will receive a rapid or slow-gilding, according to the richness of your solution.

With "Gold Solution" we shall end our receipts. We now desire to bring to the notice of the reader a matter of much importance, and in order to show the attention this subject is attracting, we know of no more truthful way than to give extracts from some of the leading American journals, which have been suitably arranged for these pages.

EXTRACTS.

[From Hillyer's "United States Mining Journal," "San Francisco Mining Press," etc.]

THE TRANSMUTATION OF METALS — SINGULAR DEVELOPMENTS. — At the present time the term Alchemist is merely synonymous with "fool," although in the dark ages it was a title of dignity given to the adepts in the mystical art, who sought by its aid to discover the "Philosopher's Stone," whereby they might transmute the base metals into gold, and prepare the "Elixir of Life." We say avarice, fraud, and folly were their motives, yet these ephemeral researches were instrumental, to an important extent, in the progress of the chemical art.

Balzac, to throw ridicule upon an unappreciated savant, remarked that "he is trying to make gold;" and George Sand compares the physiognomy of an indefatigable prospector to that of an alchemist, lost in the research of the absolute. Was it to that end that such men as Rhases, Avicenne, Bacon, Albert the Great, Raymond Lulle, Nicholas Famel, Paracelsus, and many others, have expended their lives over their crucibles and retorts?

The transmutation of metals was, in the middle ages, perfectly in accordance with the science of the day, and was not then in opposition to any known principle, *but did have absolute facts for a starting point.* They were simply misunderstood. It is true that among the adepts of alchemy there were quacks and fools who pursued the most ridiculous manipulations. Some heated mercury in close vessels during consecutive years, or indulged in the hope that by certain

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combinations of salts gold could be obtained; others, through imposture, ventured even to deceive the public by pretended manipulations.

Among the arts of life some appear to possess a progressive character, while it is in the nature of others to be comparatively stationary. Take artificial illumination as an example of the former: its history belongs to all stages of human progress; it commences with the murky glow of the firebrand, and step by step, slowly, surely it advances, until in the modern magneto-electric machine of Faraday we are enabled to grind out an artificial sunlight, and compute it by horse-power standard. Between these two extremes, the firebrand, fit type of the dark ages, and the dazzling magneto-electric light, emblem of modern science, there are all intermediate phases of progress; and beyond the modern refined methods of illumination, the improvements which may in the future take place are beyond prediction. Compare with this, for a familiar and somewhat parallel instance, the art of catching fish; compare the modern nets and hooks with those of the past ages; compare the harpoons, spears, and creels of civilized people with the contrivances of the African and other savages. If this be done, it will be seen, we opine, that there is something belonging to the nature of practice itself, which relies upon simple methods, such as must soon be arrived at, and which, once in practice, have not the expansibility or property of growth belonging to instances of the first class. This view, as we have put it, is, we are aware, true in a degree only; but, accepted with a caution, it will be found, we believe, in a multitude of instances, and in the main, correct. The art of extracting gold from its matrices is, possibly, of a character intermediate between the two extremes above instanced. It affects simplicity, and certainly has progressed but little. The fleece sunk in Pactolian streams by the shepherds of the old world, and thus gradually becoming golden, is represented by the druggets and blanketings of the quartz mill of the present day. The stamper is a hammer. The Chilian mill, a pestle and a mortar; the amalgamating barrel, a churn.

All these are, indeed, improvements for the mechanical extraction of gold from the rock; but inventions for gold extraction may be of a chemical nature. Let us consider how far we may indulge our hopes in this direction. We have heard of fusion processes. There was Longmaid's, and many other propositions of this nature, all of which have sunk into calm repose. There was an American invention, in which the quartz was to be admirably dissolved in a caustic solution, under pressure, and the gold, however finely divided, was to subside through the gelatinous mass; all this was to

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take place, and more than all this. The waste of the process was to supply, somehow, the refined productions of the ceramic art; it was to be stained and dyed with all the brilliant tints of the rainbow, and was to be consolidated into blocks suitable for new and gorgeous styles of architecture. Our houses were to be translucent palaces of lapis, opal, and jasper. Does not this sound as if we were ourselves romancing? and yet, in truth, we are but narrating a very mild edition of the announcement. Besides this there was a chlorine process, in which all former chemical experience was adroitly set at fault. These are instances of propositions for chemical processes, and they tend to show how small a progress has been hitherto made in adapting the processes of the chemist to the extraction of gold on the grand scale.

A few years since a famous professor of the University of Halle, named Semler, announced that he had discovered the grand secret. The Academy of Berlin indeed found in the retorts of the chemist the presence of gold. Some years after, in England, Dr. Price executed several times, in public, the transformation of mercury into silver and into gold, by the addition of a little powder. He, however, failed to put it into a practicable working shape, and his discovery fell into disuse, as also did the discovery of Semler from similar causes.

Although these unsuccessful attempts ought to give the last grace to alchemy, others came forward which seemed to confirm the possibility of the transmutation of metals.

Thus Van Helmont relates that, in 1518, he received a quarter of a grain of a substance by which he converted eight ounces of mercury into pure gold. Helvetius, physician to the Prince of Orange, claimed to have obtained the same result; and the Count de Reuss transformed, in the presence of the Emperor Ferdinand III., two pounds and a half of mercury into fine gold by one grain of a red powder. With this gold a commemorative medal was struck, which could be seen as late as 1787, at the Treasury Department at Vienna.

At the present time the "secret art" and the researches of the middle ages are held in less derision than formerly. The phenomena of allotropism and isomerism sustain the opinions of Bacon, Verulam, Spinoza, Leibnitz, and Sir Humphrey Davy, who, as the priests of Hermes, believed in the philosopher's stone, and in the transmutation of metals. Many of our readers will be astonished to learn that two of the most illustrious chemists of the present day, MM. Dumas and Berthelot, entertain the same opinion.

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A few months ago, Berthelot, in a lecture at the College of France, expressed himself as follows: "The synthesis tends to the demonstration of this capital truth, that the chemical forces which govern organic [inorganic?] matter are really, and without reserve, the same which govern animal matter."

M. Dumas gives, in his excellent lessons on philosophical chemistry, the following significant words: "Is it possible to admit simple bodies to be isomeric?" This question touches closely that of the transmutation of metals. Affirmatively answered, it would imply chances of success in the search for the philosopher's stone. We must then consult experience; and experience, it must be confessed, is not as yet opposed to the possibility of the transmutation of elementary substances. On the contrary, it even argues against our repulsing this idea as one which is demonstrated by the present state of our knowledge to be an absurdity.

The question of the transmutation of metals has recently made a new advance, thanks to the learned researches of Dr. Henri Favre and of M. Franz, the metallurgist of Paris. The possibility of transforming silver, copper, and mercury into gold, announced by them, has strongly attracted the public attention. Nevertheless, in making their discovery public, the object of the inventors has been less to prove that they have succeeded in making gold, than to demonstrate the essential instability of elementary substances, the importance of which fact, in the scientific world, is very great.

All substances in nature owe their respective properties only to the fixation of forces, which have passed, for the time being, into a static condition, but which are always capable of being called forth into a state of free activity. All these substances, then, according to MM. Favre and Franz, should be regarded as produced by the operation of one and the same common and original principle. It does not follow, however, that the metals are composed of still simpler elementary bodies, which, by their intimate union, have hitherto escaped the means of analysis. They should rather be considered as simple in a chemical sense, but as a composite in a dynamico-static sense. This principle once admitted, it was easy to determine the experiments that should be made, and which have been made accordingly.

It results from the experiments of MM. Favre, Franz, and a few other scientific men, that the transformation of silver into gold takes place in two distinct stages or phases. The first has for its object the change of condition of the silver, which does not yet, however, constitute gold. The second has for its object and result

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the change of this new indeterminate body into the definite condition of fine gold.

[From the "Syracuse Journal," etc.]

THE PHILOSOPHER'S STONE DISCOVERED. — "The two great objects of science — if the old alchemical researches deserve that name — in the middle ages were the discovery of the Philosopher's Stone and of the Elixer of Life. The former changed whatever metal it touched into gold, the latter prolonged human existence to an indefinite period. Hundreds of lives were wasted in endeavors to wrest from Nature one or both of these supposed secrets. And the lives which were so wasted were generally such as the world, in those dark days, could ill afford to lose. For the ancient alchemists were men of acute intellectual powers, and of great continuity of purpose, and they possessed all the scientific learning then extant. Had their wonderful energies been bent in a more sensible direction, they might have produced incalculable changes in the world's history. But, after generations of fruitless efforts, the race finally died out, and, in its decay and death, generated the better but still cognate brood of modern investigators — the true men of science. With the alchemists, the delusions which they cherished are commonly supposed to have perished. Chemists pronounced the philosopher's stone an impossibility. But, if we may believe the French journals of the latest dates, the *alchemists were right* and the chemists wrong. For Franz, a tolerably well-known metallurgist, and Henri Favre, editor of the *France Medicale*, a periodical of the highest reputation, authoritatively announce that they have succeeded in discovering a method of transmuting silver, copper, and mercury into gold. They boldly declare that these substances 'are only one and the same metal in different dynamic states.' Foreign scientists are awaiting with great interest a revelation of their process."

That these men will realize immense wealth by their discovery, no one doubts, but we believe there are other "scientific modern investigators," who have recently made the same valuable discovery, and who are fully entitled to share the honors with Franz and Favre, having put their discovery to practicable use.

To those who may have considered transmutation as an impossibility, what can they think of the extract given below?

[From the "New York Herald," Nov. 18, 1866.]

"Mr. FIELD thanked the president and members most sincerely for the kind words that had been bestowed on him. After the

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lengthy remarks he had made recently at the banquet, he was sure he need not trespass on their kind attention. The telegraph was still in its infancy. All looked with wonder upon what had been accomplished in the last quarter of a century, since the first lines were open to the public, and only fifteen years since the first submarine cable was laid to connect France and England, and now the lines extended nearly all over the globe, and the time would come when you would read here, every morning, the news, not only from Europe, but from Asia and all parts of Africa, Australia, and India. Improvements would be made in many directions. *He was told of an Italian who could transmit by telegraph the fac-simile of one's handwriting, and he exhibited a specimen which had been achieved at a distance of four hundred miles.*

"Mr. BANCROFT. — If the beautiful ladies that are here to-night could only be flashed across the wires! [Laughter.]

"Mr. FIELD remarked that *photographs had been transmitted, and that one of the first was that of the widow of Lord Byron. He exhibited specimens.* It was a great pleasure to him to feel that the enterprise with which he had been so long connected had now been brought to a close. He rejoiced that there were many that had been spared, who had been concerned, one way or another, in the enterprise. He triumphed and rejoiced with all those Englishmen and Americans who had so liberally poured out their money, that it was now a pecuniary success. He rejoiced that the telegraph would bind together the different nations of the earth, and believed it would promote peace and good will throughout the world, would carry the blessings of civil and religious liberty over the globe as much as anything else discovered in the last century. He felt he would gratify those present if he would retire from this place, and give way to one whom every one loved to hear. For this kind welcome, he would say 'God bless you all.'" [Applause.]

From the above extract, it will be observed that Mr. Cyrus W. Field, in presence of the Century Club, and in reply to an address from the historian, George Bancroft, makes the announcement, that photographs and *fac-similes* of one's handwriting are now sent by *telegraph*, specimens of which he exhibited to those present.

When we compare the science of telegraphing with that of transmutation, it does indeed seem that the former is the most wonderful of the two; yet, but a few years since, *both* sciences were pronounced as impossibilities. *Now* the most noted men in all Europe and America testify to the practicability of both sciences.

The extracts given above are sufficient proof of the reality of the

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subject of transmutation, and, in bringing these extracts before the reader, we do so simply for the reason that we do not wish to appear as speaking of things which are impossible. Now, to any fair, candid person, who will set aside all prejudices, and will examine, we have no hesitancy in saying, there is in the process spoken of a *practicable* combination, which, when properly worked, is more valuable than is imagined, and of which the entire merits cannot be fully described in a work of this character. Of one thing, all must be convinced, and that is, with the information *already* given in this book, the true guide to independence is shown, and the key to all knowledge placed within the reach of every reader.

Some may inquire if there are no more simple means of making the gold combinations than those given in this chapter, and what steps are necessary in order to put this knowledge to a practicable use? Others again may be of the opinion that the combination of metals are too simple to gain the object sought for, etc. To those who have the latter opinion, it must be understood that it is *not* the *ingredients* used that make and wholly gives us the alloy of gold or silver. The number of parts of each ingredient required, the exact weight, purity, and proportion of each of these parts must all be correct and in harmony. Then, when properly combined, we have as a result a combination which so nearly resembles the genuine, in every particular, that the most experienced judges are deceived, and are constantly pronouncing the combination as the genuine metal.

Nearly all metal workers are of the opinion gold is made from the most simple ingredients, equal in every respect to the genuine, but ask one of these gentlemen the purity, exact proportion, and harmony required for each of these parts, which go to form the combination, and you will find he is unable to give the proper information, unless he has devoted much attention to the subject, and has vast scientific knowledge.

As before remarked, the ingredients and metals used must all be perfectly pure, properly proportioned, and in exact harmony; a single ingredient, if the least impure, would spoil the combination.

To those who questioned first, and wish the best plan for putting this knowledge to a practicable use, we would state, the receipts for gold, as given in this chapter, are most excellent for workers in metals, and scientific men, who understand the nature of platina, and use of oxy-hydrogen or æro-hydrogen blowpipe, to fuse with, as platina fuses only readily with aid of these; but to those who do not understand the nature of platina, or use of æro-hydrogen or

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oxy-hydrogen blowpipe, the practicable working of these receipts is, of course, out of the question.

In order to overcome these drawbacks, and to give to all an equal chance, a simple and comprehensive plan has been perfected, which gives results far superior to any receipt named in this chapter, and by which the most ignorant person, no matter how unacquainted with metals, may gain full success. By this plan every metal and ingredient is rendered "A No. 1" virgin pure, all foreign substances being removed, the impurities and dross which usually encumber combinations in fusing are not to be met with, and the ingredients being chemically prepared, are rendered fusible by the same heat required for gold, silver, copper, and similar metals, thus dispensing with use of all blowpipes, and complications of every description.

In preparing the material for the new beginner, each separate ingredient and part, which goes to form the combination, is in a chemical state of purity, and is harmonized and exactly proportioned, thus giving uniformity and all required advantages; each ingredient is then boxed up, separate, and is named and lettered to correspond with the combination directions. The small boxes, containing the different ingredients, are then put into a larger box, which contains crucible for fusing, and all are packed secure for shipment. When the operator receives his box, he finds everything ready for immediate use; and so plain and explicit are the printed combination directions, giving every secret, on all points, that, no matter how dull or stupid the person may be, if he can but read the alphabet, and has knowledge equal to a lad of fifteen years, he can readily understand all, and meet with entire success.

This combination can be applied to every purpose of ornament for which gold is now used, and, as there is a large and increasing demand for this combination, when properly made, sale will be obtained for all who may desire it. *Persons desiring to examine a specimen will be furnished with one, by mail, upon receipt of fifty cents.*

To those who may wish to improve their condition in life, and avoid the many hardships incident to a life of toil, we know of no business offering equal advantages with this; and, as the cost to procure the box, with combination, containing all complete, is but small, and, when properly made, the profits large, the poorest man, if deemed worthy and honorable, may be assisted.

Having obtained the exclusive agency, in this country, for furnishing combination ingredients, as above spoken of, all worthy and

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honorable persons, who may desire to learn of the conditions on which these combinations are furnished, may address as per title-page of this book. Many flattering recommendations could be given by parties successful in working, but names or addresses are *never* given, except by special consent. All corresponding here are assured that no breach of confidence will ever occur.

Some will be of the opinion that the evil-disposed may put the knowledge this book contains to an unlawful use. In order to quiet the minds of this class, we know of no better way than to give, in substance, a paragraph from one of Alfred Smee's works.

"It is true that metallurgy offers many opportunities for fraudulent proceedings, as by it the forger can copy, with ease and unfailing accuracy, any embossed surfaces or stamps, and therefore no embossed work whatever should be used where there is likely to be any inducement for copying. By it seals may be forged, and an impression may be taken off a copper plate, if it only remain in the possession of the party for a few seconds; besides, our new science gives the false coiner many opportunities to further his fraudulent practices. These things are particularly pointed out to put people on their guard against the designs of bad men."

"Science, however, must not stop because some of its applications are liable to be turned to bad account by the evil designed; and we must recollect that those things which can be forged by the metallurgist, can also be forged by other processes before known. It was a favorite maxim of our great countryman, Wollaston, that 'whatever man can execute, man can also copy,' and therefore the very idea of any device being inimitable is absurd." By this, it will be seen readily, that those who use these combinations for an honorable purpose, run no risk whatever; while those who do unlawful things, have a diseased conscience, and the state prison continually staring them in the face.

☞ We would particularly caution the reader to see that no defaced copy of this work is offered for sale. The author's name is stamped on the outside binding of each book, and name, with full address, given on the title-page; if either of these are wanting, or you are advised from *any* quarter to address different, send a *registered* letter, with the particulars, and a suitable reward, with thanks, will be given.

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☞ Bear in mind that in *every* letter, no matter how often you may have written before, give your FULL NAME, POST-OFFICE, COUNTY, and STATE, enclosing a three-cent stamp for reply, then no delays occur. Papers, circulars, etc., sent in large or small quantities, free, to all who may desire them.

☞ Before concluding, the author will thank his numerous friends and patrons for the many favors received, and, if devotion to business, with the same prompt and honorable attention given to all their wants, will merit the continuance of the more than liberal patronage bestowed for the many years past, then rest assured we shall not only keep our *old* friends and patrons, but gain many *new* ones. Friends who will hand around a few copies of our paper to their neighbors, or place them where they will be read, will not only confer a favor upon us, but be the means of doing much real good for suffering humanity.

☞ Agents are wanted, both male and female, in every city, town, village, and place in the United States and the Canadas, for the sale of this work. The most liberal inducements are offered to enterprising persons. Full information can be had by addressing us, with stamp for return postage. The proper address will be found in full on title-page of this work.

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PART LAST.

SCIENTIFIC, MEDICAL, AND USEFUL DISCOVERIES.

CONCLUSION.

BEFORE completing our work, we deem it a duty to place before the reader a list of such articles as are in general demand, which are free from all deception, and can be relied upon to the full extent of the indorsement connected with each item.

FRENCH MENSTRUAL GOVERNOR AND PREVENTIVE.

Having on pages 361, 362, 363 of this work explained the benefits to be derived, in the use of a SAFE, RELIABLE, AND HEALTH-PRODUCING PREVENTION OF CONCEPTION, no extended remarks are required here.

We have simply to state, that, after a *thorough* and *satisfactory* test these Preventives, unlike any heretofore used, have given universal satisfaction, and proved worthy of the great confidence which has been so freely bestowed upon them.

They are simple in construction, *free from every and all inconveniences* in use, are promoters of *regularity* in the menstrual flow, giving a natural and healthful tone to the female system, where before uncertainty or disease may have existed. They do not, in any manner, interfere with the free exchange of magnetism; they permit the free, unobstructed influx and efflux of individual electricity, and the combining of the acids and alkalies during connection. Those who use them claim an increased degree of pleasure during coition. When in use, pregnancy cannot possibly occur. They will not get out of order, and will last many years.

These Preventives can be used unbeknown to the opposite party, thereby placing conception entirely under the control of the wife, where it properly belongs. She alone is best able to judge when she is fitted to become a mother, and assume the care and responsibilities, the proper moral and physical training, of her offspring. We consider these preventives fully entitled to the reputation they have earned, and of being called, namely, "*The Woman's True Friend.*"

Medical science has, as yet, failed to produce anything the equal of these in preventing pregnancy, and promoting regularity in the menstrual discharge. With each *Preventive* and *Governor* is sent *full printed directions*, containing every important item relating to the sexual functions, with full confidential counsel and advice to the married of both sexes; — which alone is worth double the price of the Preventive.

SPECIAL NOTICE. — Ladies supposing themselves pregnant must not handle or use the Preventive, as miscarriage would be liable to follow. While the fœtus would be expelled on natural principles, with no more inconvenience, still it is unlawful to produce an abortion: hence this caution.

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Price of the FRENCH MENSTRUAL GOVERNOR AND PREVENTIVE, all complete as above, is, single one, $5; two, $9; three, $12; four, $15. We give these several prices, that those who wish to economize may club in with one or more friends in ordering several, thereby making a saving in proportion to the number ordered. All orders will receive prompt attention, and be filled by each return of mail or express, sent free from damage or curiosity, upon receipt of the price.

MEMBRANE COATS.

These are an improvement on the ordinary French male safe, condum, sheath, or envelope. They are manufactured in Sweden, from the bladder of the celebrated silk-fish, and in fineness of texture are equal to the finest membrane of a human being. They are durable and strong, and will stand more hard usage before rupturing than the penis itself. They are unlike anything heretofore offered, being made from a single bladder, without seam or joining of any description. Those usually sold are made from the intestines of animals, being heavy, coarse, patched-up affairs, and liable to injure any one wearing them.

The membrane coats are perfect preventives of conception, in addition to which, they are also a perfect safeguard to all contagious diseases. As they cover the male organ entire, it is out of the question for the person wearing one of these to *take* or *give* a disease. Many married men, whose business calls them from home, are liable to accidents, and, for the protection of their innocent *better halves*, if not themselves, should neglect no safeguard; for surely no man could be so base as to entail upon his bosom companion a loathsome disease.

These membrane coats are perfect conductors of individual and combined electricity, thereby allowing a degree of enjoyment which can be realized by no other covering known. Price, $5 per dozen; $3 per half dozen. Specimens, $1 each, sent by mail in an ordinary letter, free from damage or curiosity, upon receipt of the price.

NEW PATENT FRENCH GUTTA-PERCHA COVERINGS.

These are the best goods of the kind made; being elastic, strong, and durable, are much inquired after. There are three kinds, *the plain, those having "delighters" on*, and *the short covering*, which fits snugly around the glans penis; all of these are preventives to conception and contagion. Price of the *full size*, with or without "delighters," $4.50 per dozen; $3 per half dozen; $2 per quarter dozen. Specimens, $1 each. The *short coverings* for the glans penis are supplied at $3 per dozen; $2 per half dozen; samples, $1 each. Either kind will be sent, free from damage or curiosity, upon receipt of the price.

ELECTRO-MAGNETIC MACHINE.

DIRECT TO AND FRO CURRENT.

For medicinal and scientific purposes these have no equal. In every case of disease, where it is proper to use electricity, better satisfaction, being less trouble in applying, is obtained from this machine, than from any heretofore offered to the public or profession. In preventing pregnancy, and adapting the sexes to each other, giving full, healthful, and undiminished enjoyment, this machine has no equal. The only drawback is in its high cost; still, when one has a machine, it can be applied to so many purposes, and forms such a

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handsome parlor ornament, that the cost, if divided amongst the many uses to which it can be applied, would make it the cheapest preventive known. A book, giving full details of its application to diseases, etc., accompanies each machine. Price, complete in handsome polished walnut case, $25. Will be sent by express, securely packed, upon receipt of the amount.

BARRENNESS.

To those who are more troubled to have children than to prevent, see pages 363, 364, 365 of this work, and address me confidentially, when a satisfactory reply, with prompt and honorable attention, will be given.

DANE'S SUSPENSORY BANDAGES.

These are a new invention for supporting the scrotum or testicles of the male; will adjust themselves to any size desired. Should be worn by all persons having varicocele, or who are affected by weakness, arising from abuse or other causes. They are much worn by gentlemen during warm weather, when the scrotum may be relaxed. Price, $3. Sent by mail, free from damage or curiosity, upon receipt of the money.

BARNES'S PATENT SHOULDER-BRACES.

These are considered superior to any article of the kind heretofore manufactured; are adapted to both sexes. In ordering, let the arms hang naturally by the side while some one passes the measure around the upper part of the chest and arms, an inch below the shoulder. Send the measure with the order, and, upon receipt, enclosing the price, $5, prompt attention will be given by mail or express.

SUPPORTERS AND PESSARIES.

These are used for cases of displaced or falling womb. Prices range from $5 to $8. These should never be worn, unless all treatment fails, and the case becomes confirmed.

PATENT RUBBER SYRINGES.

These are manufactured for both male and female. They can be used for years without losing power, and, for convenience and durability, surpass anything yet seen. Prices range from $2.25 to $3.25. Will be sent by mail or express, free from damage or curiosity, upon receipt of the money.

ALSO THE PATENT BACK-ACTION SYRINGE, *designed to eradicate disease by ejecting the virus from the system of either male or female, thereby preventing the taking of any private complaints. It is also the best syringe known for all female disorders, whites*, etc. Price, $4. Sent by mail, free from damage or curiosity. This is truly an article of merit, and should be in the hands of every lady and gentleman.

PATENT IMPROVED BATTERY.

This battery is superior to any heretofore known, can be used for plating goods of every description, among which may be mentioned spoons, knives, forks, harness trimmings, and trinkets of every variety, either with gold or silver solution, and warranted to be equal to the best.

Price, complete with full instructions, sent securely packed, by express, is $10.

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SUPERFLUOUS HAIR.

This remedy is for the removal of the extra growth of hair, which many are troubled with, on the lips, forehead, low down in the neck, etc.; is much used by ladies. It does no injury to the flesh or skin, and is permanent, after a few applications, in its effects. Price $3 per package; two packages $5. Sent, with full counsel and advice, upon receipt of the money.

WALTON'S FISH BAIT.

This preparation is used to attract fish, and can be employed in large or small quantities, or with hook, thereby giving far greater returns to the fisherman than would otherwise occur. Price $3 per package; two packages $5. Will be sent, with full instructions, upon receipt of the money.

ELECTRICAL METAL SOLES.

These soles are light, flexible, and pleasant to the wearer, readily adapting themselves to the shape of the foot, and imparting a wonderful tone to the muscular and nervous systems, equalizing the circulation, and keeping the feet warm under all circumstances.

In Rheumatism, for which they were first used, they have cured cases of many years standing in a few weeks, and in no case have they failed to give great and permanent relief.

For Cold Feet, they are invaluable. We have certificates from car and stage drivers without number, by whom they were thoroughly tested during the past winters. Skaters will find them of great service, preventing chilblains and frost-bitten feet.

Females, and all persons of delicate constitution, should at once try them. They will be found to keep the feet dry, and those subjected to blistered feet from long walking will find them an efficient relief.

In all nervous affections, erysipelas, salt rheum, scrofulous eruptions, they will be found to give permanent relief, and to effectually counteract mercurial and other poisonous influences in the system.

They are worn in the ordinary boot or shoe, without the least inconvenience. In ordering, give the size or number of your boot or shoe. Price, $3, $5, and $8 per pair, according to quality desired. When sent by mail, fifty extra cents for postage must be enclosed.

All persons requiring goods, of any description, in the medical or surgical line, can write in perfect confidence. Ladies, particularly, would rather apply to a physician for remedies, etc., than to call at public places for them. In the inland towns it is often difficult to obtain many things which are to be had readily in a large city like New York. Anything our patrons may desire, we will with pleasure procure for them. Persons addressing us will bear in mind that the return postage must be enclosed in all letters. Please write very plain your NAME, POST-OFFICE, COUNTY, and STATE, in every letter. Remittances by money orders, drafts, or by express, are never lost or delayed. All letters and orders are filled by each return of mail or express. Address all letters to DR. JEFFERSON B. FANCHER, No. 68 WILLIAM STREET (former number 66), NEW YORK CITY.

N. B. — We are the exclusive agents for every article named in this book.

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IMPORTATIONS FROM FRANCE.

The French prepare the articles named below, which, being genuine goods, can be relied upon as far superior to any preparations heretofore offered to the public.

ENLARGING AND RESTORING.

This preparation is for *permanently enlarging and restoring the sexual organ in man to a healthy and natural condition.* It also gives a uniform tone to the desires, thereby adapting the sexes to each other. It removes that extreme mortification which many experience, knowing full well their inability to perform, with any degree of satisfaction to themselves or partners, the duties which nature requires; all of which arises through smallness, etc. Those who are unable to go under a special treatment, see pages 363, 364, 365, will find in this preparation all they may require. Price $5 per package; two packages $8; three packages $10. Full instructions, including counsel and advice, sent with each package, securely put up and shipped, free from damage or curiosity, by mail or express, upon receipt of the money.

NATURE RE-INVIGORATED.

This remedy is for the *complete* and *permanent restoration* of the *sexual desires* in both male and female, and for the *removal* of that *cold, unsatisfactory feeling* which many experience in the act of coition. It gives a natural and healthy vitality to the sexual system, and, in cases where special treatment is not desired, see pages 363, 364, 365, is particularly recommended to weak, debilitated females, who, generally speaking, experience only pain while submitting to the demands of marriage. In the instructions sent with this, as also the first-named preparation, there is much explained which would not be suitable for a work of this kind, and such *private counsel* and *advice* sent as only those who are specially interested can appreciate.

If it is desired to give this preparation unbeknown to the opposite party, its real character can be concealed, and it can be given to either party without their knowledge, the result being the same. Sent complete, with full counsel and advice, free from damage or curiosity, upon receipt of the money. Price, one package $3; two packages $5.

BREAST ELEVATOR.

This means is prepared on chemical and scientific principles. It gives a natural and neat form, doing away entirely with all artificial shaping, and where special treatment is not needed, is recommended to single or married ladies as the best and most successful means known. All is fully explained in the instructions. Will be sent by mail or express, free from damage or curiosity, upon receipt of the money. Price $5.

CURE FOR LIQUOR DRINKING.

This preparation (except in cases of confirmed sots or vagabonds) eradicates the inclination for, and causes the drunkard to loathe and despise the use of, all stimulating liquors. Sent, with full counsel and advice, free from damage or curiosity, upon receipt of the money. This remedy is used unbeknown to the person drinking. Price $5 per package; three packages $10.

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CURE FOR TOBACCO CHEWING.

This is a combination which removes, gradually and naturally, that longing for tobacco which many chewers have acquired, to the great injury of their health, and which so thoroughly does away with all desire for tobacco that the habit is permanently cured, and its use no longer considered a necessity or pleasure. Sent, with full instructions, upon receipt of the money. Price $5 per package; three packages $10.

SOUND GUMS AND BEAUTIFUL TEETH.

This compound removes every vestige of disease from the mouth and gums, gives the teeth a beautiful pearl appearance, and does no injury to the enamelling, makes the gums hard and sound, leaving in the mouth a pleasant taste and natural feeling. It is healthy, perfectly harmless, and the best preparation in use; being compact and convenient in form, specially recommends it to all having use for a preparation of this character. Price $3 per package; two packages $5. Sent, with full instructions, upon receipt of the money.

LUXURIANT HAIR AND WHISKERS.

This is a healthy and harmless preparation, compounded on correct principles. It gives general satisfaction, and, for its special purpose, is superior in every respect to any compound or mixture heretofore known. Where no organic disease exists, it permanently restores the hair on bald heads, giving a natural and healthy growth. Price $3 per package; two packages $5. Sent, with full counsel and advice, upon receipt of the money.

SUBDUING WILD OR VICIOUS HORSES.

This discovery has been so generally successful, even in the most desperate cases, that it specially recommends itself to those who are brought in contact with horses having a wicked or evil disposition. It is perfectly harmless in use, and will be sent, with full instructions, upon receipt of the money. Price $3 per package; two packages $5.

JEIN'S MAGNETIC ATTRACTOR.

An article for locating the direction of minerals, metals, mines, oil-veins, etc. Sent, with full instructions, upon receipt of the money. Price $10.

COARIES'S ART OF FASCINATION.

This is full and explicit in all details, easily understood, and will be sent, complete in all its explanations, upon receipt of the money. Price $3.

☞ The goods comprised in the above list are all fresh and genuine importations. Every article is packed secure, and sent, free from damage or curiosity, with full instructions, upon receipt of the price. Remittances by POST-OFFICE ORDERS, DRAFTS, or by EXPRESS, cannot be lost. Goods sent by each return of mail or express; write, very plain, your NAME, POST-OFFICE, COUNTY, and STATE in EVERY LETTER, enclosing stamp for reply; then no delays occur. Address all orders and letters as per title-page. Papers, circulars, etc., sent free to all who apply, or who give the address of their friends.

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